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VIDEO

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- How To Make Key Decisions
- 6 Full Systems To Help You Choose

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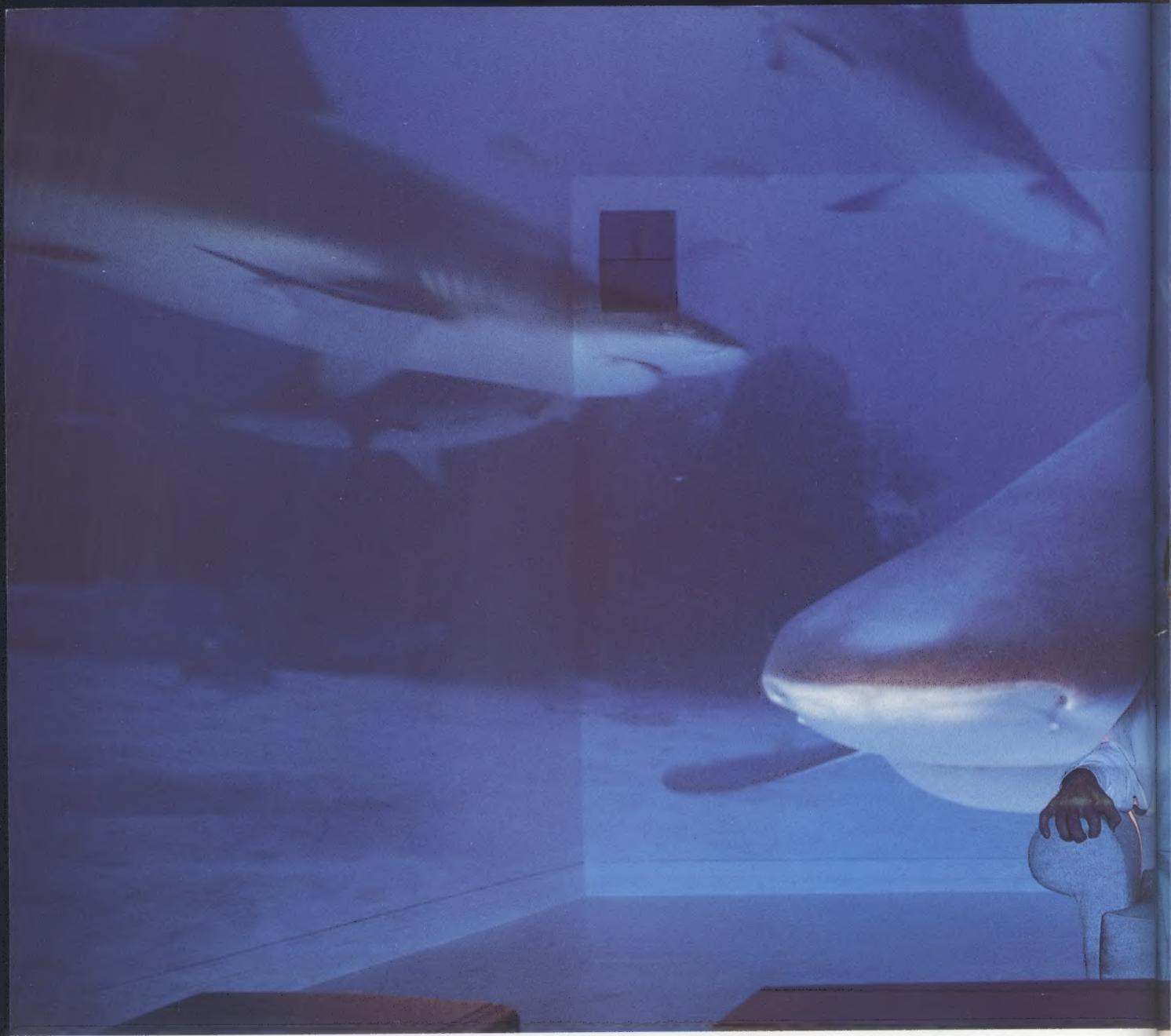
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5 VIDEOTESTS

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Getting serious about home theater. Pictured are ProScan's 27-inch PS27153 TV, Fosgate's Model Four surround processor, Sony's SLV-920HF VCR, Pioneer's CLD-D703 combi player and a front speaker from Energy's Reference Video System. Photograph by Les Morsillo

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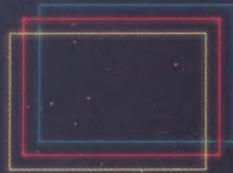
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Home theaters & small receivers

Home theaters have never been more desirable, partly because there have never been more ways to achieve first-rate audio/video environments. But selecting the right components takes effort, and that's why this month's cover story features a helpful guide to planning your home theater. Contributing editor Ron Goldberg discusses the key questions you'll need to consider, while a sixpack of systems offer specific equipment recommendations for different types of rooms and budgets.

You'll also find good advice this month about TVs, PCs and ESP. Contributing editor Jonathan Takiff's valuable buyer's guide brings us up to date about the state of small, hand-held TVs, which seem to come in more sizes and varieties than ever before. Next, "Hotrod Your PC" offers a step-by-step approach to turbo-charging your home computer for the thousands of CD-ROMs, many with ingenious video segments, pouring out of America's multimedia precincts. Finally, Mark Elson's "Warranty Roulette" explains why sales pitches for extended service plans (ESPs) inspire so much distrust, and how you can decide what they're really worth.

There's good news and bad news for satellite TV. The good news is that Americans are embracing the small-dish Digital Satellite System developed by DirecTV, Thomson Consumer Electronics and USSB. Thomson revealed it produced nearly 600,000 of the RCA dish-and-receiver kits in 1994, a remarkable achievement for a new product that only began to roll out in the middle of the year.

The bad news is in Iran, where the mullahs have decided too many citizens are enjoying themselves by watching Western TV programs pulled in by backyard dishes. To counter the so-called corrupting influence of the TV shows we take for granted, the Iranian government has simply banned all backyard receivers. But we'll be surprised if the crackdown is as effective as its enforcers hope. Electronic borders are growing more porous with every passing year, and a similar edict in China is widely ignored.

This year's Consumer Electronics Show in Las Vegas, from which we've just returned, was one of the most exciting in years. There were scores of intriguing new products and fascinating previews of coming technology, including powerful displays of digital video. Look for a full report in next month's issue.

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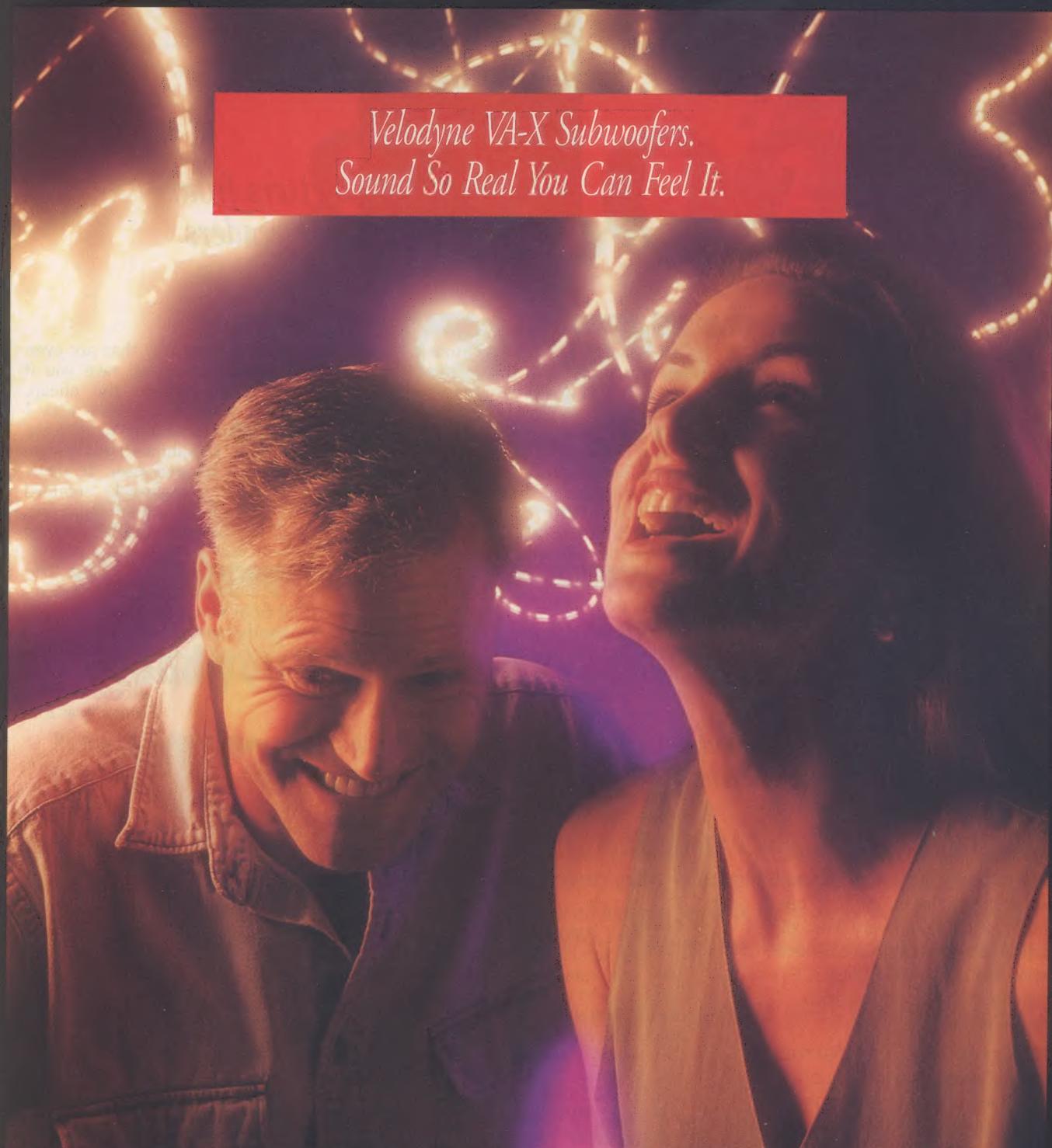
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Letters from
our readers

Music to the ears

I love my RCA DSS dish! Your magazine was my bible in the decision-making process. It had everything I needed to know, when I wanted to know it. My most unexpected use of this satellite system has been for the music channels, which have excellent selections with CD-quality sound. I wonder if I'll ever assemble cassette compilations again. However, my friends and I all want to see American Movie Classics on DSS as soon as possible.

Les Perkins
Glendale, California

Magical eyes

"Video Magicians" (Jan. '95) is wrong to attribute 3-D television effects to light slightly delayed by a neutral-density filter over one eye. Obviously, there's a psychovisual effect at play, but the brain just gives less attention to the dimmed eye. It is true that light slows down when passing through mass, but no organic system has the capacity to distinguish the infinitesimal delay caused by a sliver of plastic.

James Mattison
Dallas, Texas

NTSC, exactly

In "Big-Screen Brouhaha" (Dec. '94), you state that Proton charges \$150 extra to calibrate its 31-inch TV to NTSC standards. This is an NTSC set. What on earth are the standards they usually calibrate to, if not NTSC? Has it come to the point where you have to pay an extra fee to get what the manufacturer is supposedly including when it sells to you the TV?

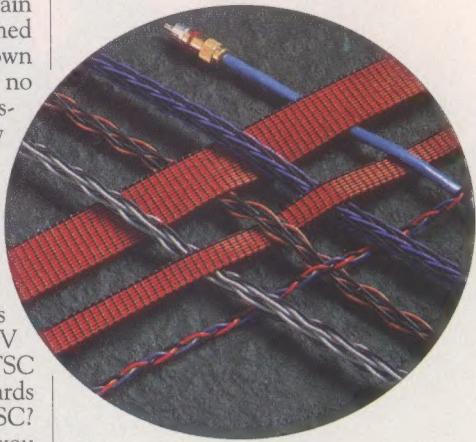
Norman Strong
Seattle, Washington

Editor's reply: Since many TV buyers are drawn to the brightest TV picture in a showroom, manufacturers keep edging the color temperature of their sets higher, away from the NTSC standard of 6,500 degrees Kelvin for the color of gray, shifting toward a brighter blue. Because of the fierceness of this competition, Proton's offer to recalibrate its sets to meet exact NTSC standards is a valuable one, even though precise calibration may not always survive cross-country shipping.

Strait talk

I learned the hard way that not even THX re-equalization will save you if your interconnects are the cheap, throw-away kind. For over a year, I moved speakers around my living room and endlessly recalibrated my Fosgate THX Model 3A processor. It never came together. Soundtracks sounded muffled or shrill, which reminded me, worst of all, that I was still analyzing equipment instead of enjoying movies. Then I saw "Wire Straits" (Oct. '94) and took a chance on a \$40 interconnect kit from Monster Cable. I thought it was another gimmick as I sat down to watch *The Fugitive* on laserdisc. Boy was I wrong. Here's to movie marathons!

Robert Valentin
Bronx, New York



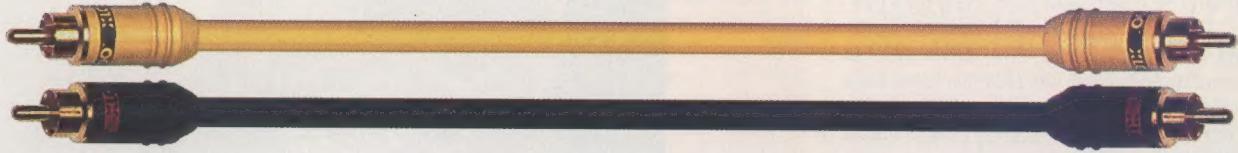
One for all

After reading "Gleaming the Disc" (Dec. '94), I felt I had to write you. I hope those manufacturers concerned with high-density discs will combine their efforts instead of competing with multiple formats. We need one recording and playback format for both audio and video.

George Baker
Bloomingdale, Illinois

Send letters to Feedback, Video Magazine, 460 West 34 Street, New York, NY 10001; or fax to 212-947-6727; or send via CompuServe to 75147,1255 or via the Internet to 75147.1255@compuserve.com. Letters may be edited for clarity and space.

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FAST FORWARD



Shadow boxing with PBS

► "The thing I like about the Shadow is he's not always doing good," says Alec Baldwin, star of Universal's *The Shadow*, just released on video. "Most super heroes are always saving people and fighting crime. The Shadow finds out about his super powers and says, Hey, let's party." But Baldwin's playful take on Lamont Cranston and his alter-ego is surprisingly at odds with his own concerns as an actor. And these days that includes a feeling that there is simply "too much entertainment" in the world.

"Movies have a nuclear half-life now," he explains. "They're on TV, pay-per-view, video. They're on airplanes, in hotels, they linger in the culture for years. When I hear talk of 500 channels in the future I scream, my God, no! Put a stake through the heart of whoever came up with that idea."

Particularly troubling to Baldwin is the state of public affairs TV programs. This explains why he's been seen on CNN debating conservative columnist Pat Buchanan about freedom of expression. Baldwin has also been involved with producer Mark Mori whose documentary, *Building Bombs*, was turned down by PBS. According to Mori, PBS often declines to show acclaimed, but controversial programs. Baldwin agrees, and asserts that the conglomerates that subsidize PBS have hooked the network's executives on their money. "I'm pretty cynical about this," says Baldwin.

As the Shadow, Baldwin may want to party, but actor Baldwin talks like a real crusader.

-Jon Silberg

THE NUMBER

\$67 billion

The amount spent each year on home entertainment, from TV programs to tape, disc & equipment purchases.

Video CDs and CD-i pick up steam

► Those looking forward to watching movies on five-inch videodiscs will have a wide variety of new players and software to choose from this year, judging from a recent conference on this fast-developing technology.

Even as major electronics companies began a somewhat rancorous public debate over a technical standard for digital videodiscs (DVD)—the high-quality videodisc that's projected to arrive sometime near the end of the decade—representatives of Philips, Sony, JVC, Panasonic, Goldstar and other companies met to voice strong support for the Video CD format currently in stores. The conference on CD-i and Video CD, held in Dusseldorf, Germany, in December, quickly turned into a showcase for an expected onslaught of Video CD products.

Sony showed a \$700 five-disc Video CD changer now available in Japan, where consumers can also choose from among 500 Video CD titles. Sony's changer features a new function called Playback Control that allows the use of chapter stops and index points on a disc. JVC displayed a letterboxed Video CD using its XL-SV1 player and a 16:9 monitor in "fill" mode. This is the first time we've ever seen widescreen Video CD. And Panasonic showed a striking Video CD player the exact size and shape of current audio CD portables.

Video CD titles may be earning the lion's share of attention in the world of CD-i lately—after all, CD-i was the first system with Video CD capability—but the conference also proved that there's no shortage of non-linear interactive software for Philips' capable CD-i format. A French software company called Infogrammes made a big splash with a preview of its new *Chaos Control*. Inspired by the look and feel of Japanese anime, *Chaos Control* uses full-screen video to send a player hurtling above a stylized version of Manhattan on a virtual jetpack, battling it out with similarly equipped enemies. It's an exciting new twist on a familiar style of gaming. The future of multimedia never looked brighter.

Jet Set:

A futuristic Manhattan in *Chaos Control*, Infogrammes' anime-style CD-i combat game.



JVC's XL-SV1 Video CD player

Video book beat-new & recommended

► From technology's future to multimedia's present, here are four fascinating books for your video reading list:

• Kevin's Kelly's *Out of Control* (Addison-Wesley; New York) depicts a future in which technology is modeled after nature. In discussing what he calls neo-biological civilization, Kelly explores the marriage of what is born with what is made. By allowing technology to evolve biologically, Kelly believes we can create appliances that anticipate human desires, like a VCR that can record what we want to watch without being asked.

• Dr. Frank Baylin's *Minature Satellite Dishes: The New Digital Television* (Baylin Publications; Boulder, CO) offers a good plain-language overview of the technology and players in the direct satellite broadcast (DBS) industry. Baylin explains how satellites work, then clearly describes the systems offered by DirecTV, USSB and Primestar. Key technical issues are covered, including encryption and video data compression. There's also a



guide to home installation of small dishes, and their integrate with existing home sound systems.

• In the world of high-tech how-toos, *Multimedia & CD-ROMs for Dummies* by Andy Rathbone (IDG

Books; San Mateo, CA) is an excellent addition to IDG's popular "dummies" series of books. Rathbone's entry is a winner. The text, packaged with a guided tour on CD-ROM, covers everything a novice needs to know about CD-ROMs as well as multimedia clip art, video libraries, graphics and sounds. This highly-recommended book can save you hours in navigating the frontier of multimedia computing.

• Leonard Herman brings a rare sense of perspective to his compelling history of videogames. *Phoenix: The Fall and Rise of Home Videogames* (Rolenta Press; Union, NJ) begins with a brief history of computing, then describes the invention of the videogame, by a federal employee in a nuclear research lab in 1958. Herman covers the rise of Atari and includes stories about the people and companies that dominate today's videogames. This insightful book would make a wonderful gift for any videogame buff.

—Frank Beacham

Breaking the size barrier

► Is there a size limit to rear-projection TVs? If there is, ProScan plans to break it this spring with a humongous 80-inch rear-projection TV, with the largest screen this technology has yet produced. The mammoth monitor uses new nine-inch CRT projection tubes that ProScan says increases light output by more than 50 percent over rear-projection sets with conventional seven-inch optics. A sneak preview of the TV showed a remarkably bright picture in a well-lit room. Additional features include two tuners, a giant 38-inch picture-in-picture, and user-friendly onscreen graphics. Suggested price for the big box is \$8,499.

—Stan Pinkwas



RCA exec Joe Clayton with mammoth monitor.

QUOTE OF THE MONTH

"The crackdown on satellite dishes should be enforced like the fight against drugs."

—HOJATOLISLAM ALI MOVAHEDI SAVOJI
Iranian parliament deputy, on an edict banning all satellite dishes because of the impact of American TV programs like *Dynasty* and *The Simpsons*.

TIMESHIFT TEN YEARS AGO IN VIDEO MAGAZINE

JVC doesn't claim its new camcorder qualifies as Super VHS, but it's better than before. At the slowest speed, recording time will be stretched to an hour. Our technical editors are eagerly—and skeptically—awaiting their first look at the wonder-camcorder...The FCC

seems ready to drag the cable companies kicking and screaming into the stereo revolution. "Must carry" rules, stating that cable companies have to offer customers the entirety of a TV broadcast signal, will probably be enforced in the near future...Farewell to another video service whose time never came. NBC Teletext attracted fewer than 200 subscribers, and has closed its doors.

The lack of affordable in-home decoders was cited as the major reason for the service being banished to the high shelf—somewhere between the Edsel and the CED...Pioneer is so pleased with its LV/CD player that it has decided to try another video/audio combo: an 8mm video deck with separate digital audio capability. The 2-way machine will record up to 9 hours of digital audio on a 90-minute videocassette...Alternative video is keeping pace with the never-ending surge of recorded theatrical films and other mainstream entertainment. New from the Stefaan Janssen Studio alternative video catalogue are Beginning Knitting, Bellydance for Fitness and Fun and Let's have an Irish Party with Carmell Quinn and the world champion Reagan family dancers.



MARCH 1985

Late Breaking News

SONY AND Philips have announced standards for a new high-density multimedia CD, firing what could be the first shot in a fresh format war over the so-called digital video disc (DVD) that is already being touted in technical and movie-producing circles as home video's future format of choice. The problem is that the Sony/Philips standards will not be compatible with DVD projects being pursued by other major companies, including Toshiba and Time Warner, and Pioneer. The Sony/Philips CD would be able to store 3.7 gigabytes of data, about five times the capacity of current CD-ROMs, while a dual-layered version, being developed with 3M, could hold 7.4 GB. According to Sony, the single-layer version could hold 135 minutes of MPEG-2 quality video plus several tracks of compressed digital audio and subtitles, more than enough for the vast majority of feature films. Stay tuned, you'll be hearing more about DVDs for some time to come.

FOR A PROPOSED OVERHAUL OF the Emergency Broadcasting System, the FCC is backing a system that would let broadcasters automatically turn on TVs, radios, pagers, CD players and other home devices to warn people of impending disasters, like hurricanes and floods. The emergency alerts, which are expected to begin operating in 1996, work through the Radio Broadcasting Data System, a new digital technology that also makes it possible for broadcasters to show call letters, song titles and artists' names, and synchronize VCR clocks.

EXPECT TO SEE FEWER COLORIZED video versions of old black-and-white movies. Turner Broadcasting, which put computerized colorizing on the map in the mid-'80s despite the objections of purists, has shut down its colorization facility. The operation has tinted about 120 films.

FURTHER SIGNS OF THE MULTIMEDIA gold rush: 1. The Walt Disney Co. has created an interactive division, Disney Interactive, to develop multimedia and interactive products, like CD-ROMs, using Disney creations like *Aladdin* and *The Lion King*. 2.

Jim Henson Productions has spun off Jim Henson Interactive to do pretty much the same thing with the Muppets. 3. Tele-Communications, Inc., the nation's largest cable company, has created CyberMedia, a new company to create interactive multimedia products, including CD-ROMs and online services.

IF YOU HAVE ONE OF LIVE HOME Video's cassettes of *Bad Lieutenant*, Abel Ferrara's film about a scabrous cop, it could become a collector's item. The industry-watching *Video Week* reports that a U.S. District Court has ordered unsold copies of the film destroyed because its soundtrack includes "Signifying Rapper," a song by Schoolly D that uses unauthorized samples of Led Zeppelin's "Kashmir." Live says it will release a new version of the film with a substitute song.

WE'VE ALWAYS THOUGHT OF the Macintosh as a glorious game machine. Now Apple has licensed its Power PC technology to Japanese toy manufacturer Bandai to create a multimedia deck for use with TV sets. Bandai is expected to introduce its CD-ROM-based Power Player late this year for around \$500.

ONE ON ONE

with George Gilder

To George Gilder, the spread of interactive technologies will enhance personal freedoms and create diverse new sources of programming. His optimistic outlook, coupled with a conservative philosophy articulated in such books as *Wealth and Poverty*, *Life After Television* and the upcoming *Telecosm*, have helped make Gilder one of the most prominent gurus of the information age. Gilder spoke recently with *Video Magazine* contributing editor Frank Beacham about broadcasting's newest trends.

Video: What surprises you most about today's new technologies?

Gilder: Direct broadcast satellites. I'm talking about Hughes' DirecTV and Hubbard's USSB. The quality is surprisingly good. They're comparable to the studio images at the head end of a cable company. It's spreading like wildfire. This is a powerful, successful competitor to cable.

Video: How has it become a threat to cable?

Gilder: The average lackadaisical, sleepy-time cable system is heavily affected by urban politics—you know, big bribes for the mayor and the various special interests in town. Those old systems cannot compete with 150 bright, clear channels that come from the Clarke orbit.

Video: How will cable companies respond?

Gilder: DBS will force cable to offer high-speed interactive computer services. PCs in the home will connect using new cable modems. We'll see cable systems connected to phone company fiber lines. It won't happen overnight, but this will be the direction.

Video: You believe that interactive networks will enhance personal freedoms and bring diversity to programming. How?

Gilder: Look at it not as a broadcasting system, but a phone system. When Alexander Bell created the phone system, he imagined it would be chiefly used to transmit radio broadcasts. The idea of people using the network for personal communications was quite alien to him. Today we look at

the emergence of vast broadband networks and imagine they will be chiefly used to transmit broadcast video. This is a similar misconception. The networks will be used for teleconferencing of all sorts. You will be sending your own image, your personal videotapes. Digital video products will be zipping back and forth across this network. It will be a silly question to ask which services will dominate. There will be more business conducted over the networks than in any single arena. It will be the central nervous system of the new information economy.

Video: Does this mean that over-the-air TV broadcasting is dead?

Gilder: The passive broadcasting model of TV is dead. But the same broadcast products, to the extent that they can compete with this huge new variety of services, will still flourish. Local news programs will do very well. People will be able to see them whenever they want, any time of the day or night.



George Gilder

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*A multiplayer, a mini-projector, 2 big screens and home theater speakers***GOLDSTAR'S 3DO ▶**

Goldstar's 3DO Interactive Multiplayer system (\$399) features a double-speed CD-ROM drive, full-motion video capability, CD-quality sound and photorealistic graphics. It includes a new seven-button gamepad and comes bundled with more than \$150 worth of software. The system also plays audio CDs, Photo CDs and video movie CDs. (For additional info, circle 101 on the Reader Service Card)

**◀MOVING PICTURES**

Sony's CPJ-100 portable projector (\$1,100) will turn your videos into a moveable feast. With a 400-hour halogen bulb, this LCD projector can throw an image up to 100 inches diagonally and can be tilted to any angle. The CPJ-100 accepts signals from any video source including camcorders, VCRs and TVs. Stereo audio inputs and outputs let you use stereo headphones or external stereo speakers. (For additional info, circle 106 on the Reader Service Card)

**PORTABLE GRABBER ▶**

Digital Vision's ComputerEyes/LPT video frame grabber (\$399) for PCs has been upgraded to accommodate portable computers and easier sharing between machines. ComputerEyes/LPT is a 24-bit capture device that allows you to easily bring images into your computer from any camcorder, VCR or still video source. It draws power from your computer printer's parallel port or from three AAA batteries. Windows capture software is included. (For additional info, circle 108 on the Reader Service Card)

**▼SWITCHABLE POWER**

Niles' SI-1200 Systems Integration Amplifier (\$849) is a fully configurable 12-channel amplifier. The SI-1200 has an ample power supply, and with flexible channel assignment allows listeners to choose either twelve 25-watt or six 50-watt channels. You can also adjust the volume individually for up to 12 speaker locations. Cascade outputs on the main bus input allow you to daisy-chain multiple amps. (For additional info, circle 100 on the Reader Service Card)

**PROSCAN POWER ▶**

Thomson's ProScan PS35660 direct-view console (\$2,699) is a 35-inch TV with dual-tuner technology and 70 watts of picture power. It also features matrix surround sound, a stereo headphone jack, a 10-watt amplifier, digital picture-in-picture, a comb filter and front inputs. (For additional info, circle 109 on the Reader Service Card)



PROTON BIG SCREEN ▼

The Proton NT-3740 (\$3,000) is a 35-inch stereo monitor/reciever with dual tuner picture-in-picture. With 181-channel auto-programming, you can watch two broadcasts simultaneously without additional equipment, or one broadcast and one picture from another video source. Proton says the NT-3740 offers 600 lines of horizontal resolution to clarify your favorite programs. (For additional info, circle 110 on the Reader Service Card)



CONVERTER FIRST ▼

EAD says its TheaterMaster digital-to-audio converter (\$5,950) is the first with built-in 5.1-channel surround-sound decoding. By including the Zoran 38001 decoding computer with five full-range channels (20 Hertz to 20 kiloHertz) and one subwoofer channel, EAD says the TheaterMaster creates a 360-degree holographic soundfield and improves Dolby Pro-Logic decoding. Included are balanced outputs and extensive remote control features. (For additional info, circle 104 on the Reader Service Card)



GOOD DIRECTION ▶

Mike Moffat Labs' Angstrom 200 Home Entertainment Director (\$2,995) is a digital sound processor that promises big, clear digital performance along with practical features. By implementing special surround sound and Pro-Logic technology, MML says it offers accurate decoding and top-level imaging. With an infrared remote control and onscreen settings, the 200 can control up to six audio/video inputs. MML says it will also install future hardware and software upgrades. (For additional info, circle 107 on the Reader Service Card)



◀ DR. THIELGOOD

Thiel's CS.5 Coherent Source Loudspeaker (\$1,350/pair) is a two-way, ported, floor-standing speaker designed to provide great home-theater sound at an entry-level price. Thiel says the CS.5's sloping baffle and synthesized acoustic crossover system result in unusually high performance for the price. The CS.5's are 31 inches tall and available with walnut and black wood veneers, or other finishes on special order. (For additional info, circle 103 on the Reader Service Card)



GOING THE DISTANCE ▶

Panasonic's TC40 VHS-C tape (\$10) can give you the extra half-hour you need to time-shift favorite movies. This 40-minute SP tape can record two hours of material in EP/SLP mode. Panasonic says special magnetic particles increase tape strength and enhance video and audio detail, while a special base material improves picture and sound quality. (For additional info, circle 102 on the Reader Service Card)

SHIELDS UP ▶

The AudioSource VS Four (\$179) is a magnetically shielded center-channel speaker. Three four-inch woofers and a polycarbonate coaxial tweeter are mounted on an angled front to improve sound dispersion and time/phase alignment. According to AudioSource, this results in sound enhancements across the spectrum. The speaker can handle 80 watts, and has an impedance of 8 ohms and a sensitivity of 93 decibels. (For additional info, circle 105 on the Reader Service Card)



Super speakers and a fast, helpful editing aid

Optimus Pro LX5 Speaker by Radio Shack

Radio Shack's mass market approach has rarely appealed to high-end sensibilities. Yet someone at headquarters must see the potential in products that cater to audio/video connoisseurs, because the new Optimus Pro LX5 is the best-sounding \$300 pair of loudspeakers I have ever heard.

A two-way design, the Pro LX5 employs a four-inch polypropylene cone woofer in a dual-vented, die-cast bass enclosure.

\$300/PR • RATING: ★★★★

The cone's output is seamlessly blended with the Linaeum film-diaphragm tweeter, which achieves dipolar high frequency response up to 25 kilohertz. While this small loudspeaker could hardly be expected to produce deep bass response, it mates beautifully with inexpensive powered subwoofers. More important, its midrange and high frequency performance is fully competitive with much more expensive products.

Auditioned through my reference audio system, the LX5 reproduced jazz, chamber music and female vocals with a clarity and transparency no other budget loudspeaker can approach. Mid and high frequencies were smooth and natural,

the output of the two drivers being remarkably well integrated. Only high volume levels or deep bass transients could flutter the LX5, its sound becoming compressed and mechanical. Unless used with a subwoofer, this compact speaker is best suited for moderate vol-



Class Act: LX5s, budget speakers with punch.

volume listening.

In my home theater system, the LX5s excelled in both front and rear channel applications. As main speakers, the tiny boxes produced a cinematic soundstage that stretched from wall to wall, and from floor to ceiling. Their broad dispersion was flattering to orchestral soundtracks, but the localization of individual images could have been more specific. At the high volumes I prefer, I used every bit of the LX5's

dynamic range (and wished for more). Nonetheless, considering their size and price, the LX5s turned in an outstanding front channel performance.

Rear-channel speakers are properly placed by aiming the "null" between the front and rear radiation patterns at the listening position. I placed the LX5s about a foot behind the listener, toed toward the side walls, so that the back radiation of both tweeters met at a central point behind the listener. The result was an enveloping surround effect, nearly the equal of that created by a pair of Energy RVSS surround speakers I listened to recently in creating a three-dimensional soundfield within the theater. Yes, the Energy provided more spacious and powerful effects, but Radio Shack's LX5 was superior to all but the most expensive dipole rear/side channel speakers.

At \$300/pair, or \$150 individually, the LX5s are so versatile and so good that anyone could find a use for them. The LX5s provide the budget-minded with an entree into the world of quality audio, and it is the perfect speaker for those whose systems must be proficient at both audio and home theater tasks. Radio Shack is to be commended for this affordable excellence. We hope the LX5 is not its last word on the subject.

-Anthony Chiarella

VideoDirector 2.0 Edit Controller for Windows

If you have a camcorder and a VCR, you've probably wanted to edit your camcorder tapes while copying them. As long as you have a personal computer with Windows and an 8mm or Hi8 camcorder with a LANC (Control L) jack, Gold Disk's VideoDirector 2.0 for Windows gives you the control to do it. The package contains software, an illustrated manual and a "smart-cable" that connects to your computer's serial port (9- or 25-pin). The three-way cable has a miniplug for connection to the camcorder and an infrared transmitter/receiver that controls the recording deck.

Gold Disk's VideoDirector 1.0 for Windows was introduced a

couple of years ago. Version 2.0 adds important capabilities. It now supports many audio and video cards, so you can automatically add graphics, music and

Gold Standard: VideoDirector's edit interface.



\$199 • RATING: ★★★★

sound effects. It also allows drag-and-drop editing. If you have a video capture card, you can grab stills from each video clip and use them as picons (picture icons) to represent each clip. Just arrange the picons in the order you want, and VideoDirector 2.0 will assemble the clips in order. It also

n o w

works

with

Sony RC time code for very accurate editing, and it can trigger a Video Toaster. There's also a Macintosh version of VideoDirector, which has most of these capabilities.

Computerized video editing usually requires all the processing speed and memory you can get plus gigabytes of fast hard-drive storage. To bypass these require-
continued on page 40

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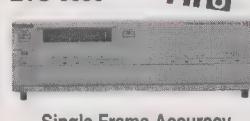
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Energy's new surround sound performance high

Here's a dilemma: You've decided to invest in a dedicated surround sound system, but the difficulty of choosing between megabuck "THX approved" loudspeakers and traditional stereo products, which have been remerchandised to capitalize on the home theater craze, has sent you scrambling for cover. What to do? There's good news, folks. Energy's \$1,600 Reference Video System (RVS) provides world class performance at a reasonable price.

The Energy name should be more familiar to American consumers. During the mid-'80s, Energy and its parent, Audio Products International, rode the crest of the critical and commercial success garnered by its Reference 22 series of speakers. But as the decade waned, API focused both attention and resources on cultivating a more upscale image for its Mirage marque. The infusion of capital allowed Mirage to develop the acclaimed M series of bipolar loudspeakers at a time when Energy's designs were showing signs of age. As Mirage bloomed, Energy withered.

Lately, Energy has been making a comeback. The company's Veritas loudspeaker has been well received by the audiophile community. Now, with the introduction of the RVS, Energy offers discriminating movie aficionados a worthy alternative to costly THX systems. The five RVS components include RVS-2 left- and right-channel main speakers, an RVS-1 center channel and a pair of RVSS bipolar surround satellites. The compact dimensions of the main speakers facilitate installation, but require a subwoofer to achieve true low bass output. I used Energy's AS-180 powered subwoofer (\$750) to do the job. The company also offers the EPS-150 sub.

The three front speakers are virtually identical. They all feature a pair of 5.25-inch polypropylene cone bass/mid drivers straddling a one-inch soft dome

tweeter in a D'Apolito configuration, which minimizes lobing effects. All are finished in an attractive high-gloss black with black fabric grilles and end caps, and all are magnetically shielded. But while the RVS-2 is designed to be vertically mounted on a shelf or stand, the RVS-1 is optimized for horizontal placement, either above or below the television. After much experimental-

generated by the Energy system. Once they were properly positioned and calibrated, the ability of the front-channel speakers to track the action taking place on the screen was all I could ask for. The Pro-Logic steering effects were presented with a flattering sense of realism, and the localization of specific images within the soundfield was both precise and tangible.

While most home theater speakers sound bright and subliminally fatiguing, I found the RVS' tonal balance to be nearly ideal. The frequency spectrum was portrayed in a proportional and cohesive manner, although I thought the midrange slightly prominent. I am pleased to report that the bass capability of the RVS-2s belie their compact size. In fact, viewers with small theaters, or those whose cinematic diet eschews blockbuster action films, might consider a subwoofer unnecessary.

My only real criticisms of the RVS front channels concern their use as stereo-only loudspeakers. Whether in my video system or in a dedicated high-end audio



High Energy: The Reference Video System with Energy's EPS-150 subwoofer.

tion, I obtained the most realistic soundstage by locating the RVS-2s eight inches to the left and right of my Hitachi rear-projection TV, pointed straight ahead (0-degree toe-in angle), with all three speakers protruding slightly beyond the plane of the screen.

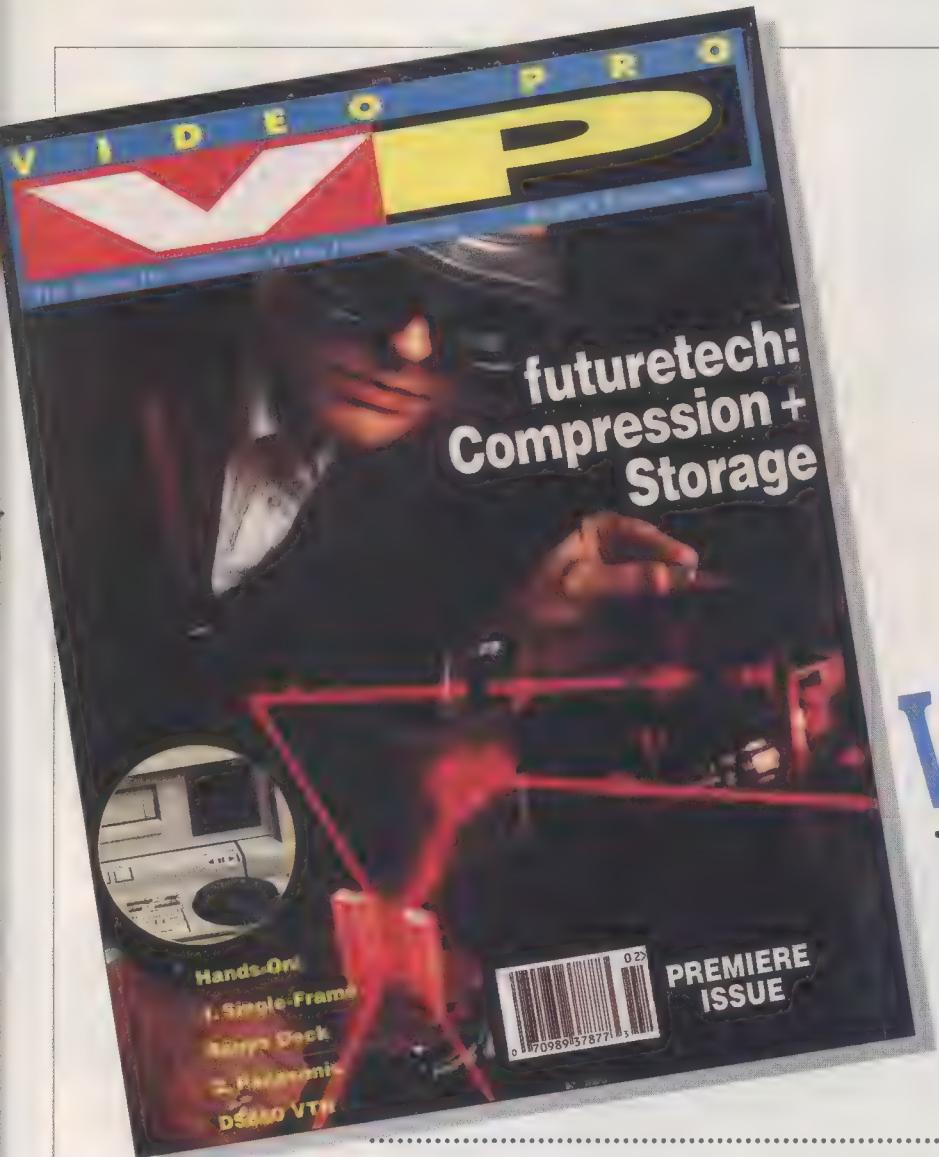
The RVS-1 and RVS-2 immediately impressed me with their vast dynamic range. Below the clipping point of my amplifier, the speakers encompassed wide volume swings with an effortless quality reminiscent of the best high-end audio products. Despite their 88 decibel sensitivity rating, however, I found the Energy front channels rather power hungry. The system's full potential will only be realized when used with a separate amplifier or high-output receiver.

I suppose the similarities between the RVS-1 and RVS-2 ensure a certain level of soundstage seamlessness, but I was unprepared for the sonic panorama

room, the RVS-2s lacked the detail and transparency required to convincingly reproduce live, unamplified music; the sound rarely left the vicinity of the speaker enclosures. These shortcomings are not surprising considering the disparity in design priorities between stereophonic loudspeakers on the one hand, and home theater systems on the other. In the final analysis, the RVS-2s are components of an integrated surround sound system. As such, they are a triumph.

ADVANCE IN THE REAR

Ever since the appearance of the first time delay devices in the '70s, the quality of rear-channel speakers was deemed insignificant. While the absurdity of this notion was underscored by the recent development of dipolar THX "effects channels," the Energy RVSS *continued on page 40*



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Energy's new surround sound performance high

Here's a dilemma: You've decided to invest in a dedicated surround sound system, but the difficulty of choosing between megabuck "THX approved" loudspeakers and traditional stereo products, which have been remastered to capitalize on the home theater craze, has sent you scrambling for cover. What to do? There's good news, folks. Energy's \$1,600 Reference Video System (RVS) provides world class performance at a reasonable price.

The Energy name should be more familiar to American consumers. During the mid-'80s, Energy and its parent, Audio Products International, rode the crest of the critical and commercial success garnered by its Reference 22 series of speakers. But as the decade waned, API focused both attention and resources on cultivating a more upscale image for its Mirage marque. The infusion of capital allowed Mirage to develop the acclaimed M series of bipolar loudspeakers at a time when Energy's designs were showing signs of age. Mirage bloomed, Energy withered.

Lately, Energy has come back. The company has been well audiophile community. The introduction of the RV discriminating movie as the alternative to cost. The five RVS compact RVS-2 left- and right speakers, an RVS-1 center, a pair of RVSS bipolar drivers. The compact direct main speakers facilitate require a subwoofer to a bass output. I used a powered subwoofer (\$150). The company also

The three front speakers are identical. They all feature 5.25-inch polypropylene drivers straddling a one

tweeter in a D'Apolito configuration, which minimizes lobing effects. All are finished in an attractive high-gloss black with black fabric grilles and end caps, and all are magnetically shielded. But while the RVS-2 is designed to be vertically mounted on a shelf or stand, the RVS-1 is optimized for horizontal placement, either above or below the television. After much experimental-

generated by the Energy system. Once they were properly positioned and calibrated, the ability of the front-channel speakers to track the action taking place on the screen was all I could ask for. The Pro-Logic steering effects were presented with a flattering sense of realism, and the localization of specific images within the soundfield was both precise and tangible.

While most home theater speakers sound bright and subliminally fatiguing, I found the RVS' tonal balance to be nearly ideal. The frequency spectrum was portrayed in a proportional and cohesive manner, although I thought the midrange slightly prominent. I am pleased to report that the bass capability of the RVS-2s belie their compact size. In fact, viewers with small theaters, or those whose cinematic diet eschews blockbuster action films, might consider a subwoofer unnecessary.

My only real criticisms of the RVS front channels concern their use as stereo-only loudspeakers. Whether



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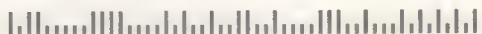
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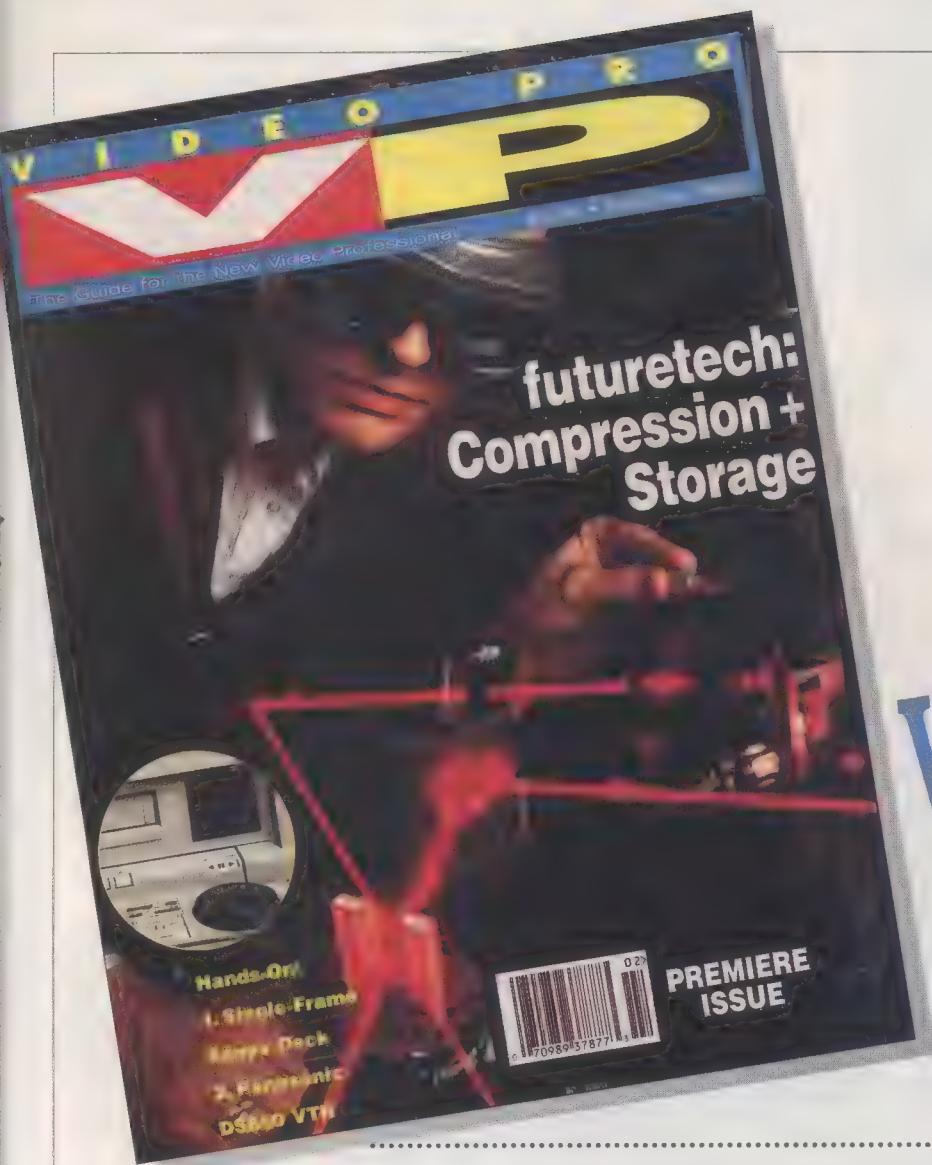
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Finding your voice as a videomaker

You've decided to make a video. But you want to create something that transcends the footage you usually collect. Where do you begin? In my work as a videomaker, I am not striving for the "perfect" video image. I am striving for a look that is going to make viewers sit up and say, "Cool." By catching their eye, I hope to intrigue them enough to make them want to watch my images; to listen, think and reach their own conclusions about whether what they're seeing adds meaning to what I am *saying*. This said, it is still important to be able to tell good video quality from bad, and it is essential to know which rules you are breaking.

Let's start with play. Play is a good thing. It is necessary to have a sense of play when creating. Alfred Hitchcock found it necessary to storyboard and script everything. But for our purposes, working with home video equipment, we have the luxury of not needing to know how our finished piece is going to turn out. It is important at the start of a project not to get too firm an idea of what you want to commit to tape. In the world of consumer and low-end professional equipment, what you see on television or in the movies is, for the most part, not something you can duplicate at broadcast levels with the components you're likely to be using.

Videomakers often start work with a look or a final result in mind, then try to find the equipment to produce it. It may seem like you're working backwards, but you should start a video with the equipment you have at hand. What can you make your equipment do that will give your footage a unique look? This is a question I was repeatedly asked by my students at Temple University in Philadelphia. I tell them this: while you are taping, take every variable control knob or button and push or turn it to each of its extremes, both slowly and quickly. This will give you a sense of how you

can make controls do what they're *not* supposed to do. And very often, this is where you can make the most interesting things happen.

My students always respond that this is easy for me to say since I work with a camcorder that generates one of the most unique looks in the history of camcorders—the Fisher-Price PXL-2000. This is a camcorder made briefly by a toy company that records pixelated black-and-white images on ordinary audiotapes (see "Toys 'R' Art," Oct. '94). I tell my students that it doesn't matter

objects take on a soft and ghostly glow. The effect is more distinctive than the out-of-focus look common to the Canon and many other camcorders at the same setting.

Now that you have your look, what ideas do you have that might be well-served by your particular style? Perhaps you will want to use the blurry, yet visually rich look you've just created using the A-1 to complement, metaphorically, a text or story about seeing or about the inability to see. Adapting your text to reflect things you see in the images you've chosen further strengthens the connection between what we are seeing and hearing. Directors are most successful when they can bring together verbal, aural and visual elements to realize their vision. We must find the strong and unique points within our camcorders and incorporate those points into our approach to video production.

However, it is not uncommon for a viewer to understand your piece in a way that you, as the creator, might not have foreseen. As director, you may choose to employ a certain visual style for no other reason than because it looks unique. People always ask whether my use of a Pixelvision camcorder relates to any number of theoretical or socio-political ideas. The truth is far simpler: I like the way it looks.

In a recent tape, *Glass Jaw*, which concerned my surgery and recovery from a bike accident and a mugging, I wanted to make further changes at the editing stage. I decided to double the speed of my source tape. Running the Pixelvision source material at 30 frames per second (fps) instead of the normal Pixelvision rate of 15 fps resulted in a distinctive look. I was later told by viewers that it was refreshing to see an altered state of reality represented by speeded-up motion rather than by slow motion, which has become a cliché. This was never my intention, but I welcome the interpretation.

continued on page 41

Setting A Mood: A church takes on a soft, ghostly glow when shot by a Sony TR101 set in an extreme telephoto position and focused on infinity.



what you work with. There will always be margins or seams to both explore and exploit.

One example: Canon's Digital A-1 Hi8 camcorder has a gain-up feature that, when used outdoors on sunny days, will blow out all but the darkest objects in your shot. With the gain-up set at 1/8 of a second, turn down the exposure indicator to compensate for this phenomenon. You may think this will only muddy the image but, actually, the result is striking. Colors will be muted and shapes indistinct, as though seen through the lens of an old daguerreotype camera. This is a look that is distinctly *un-video*.

You can also try the Sony CCD-TR101 Hi8 camcorder. Although it does not have the bells and whistles the Canon Digital A-1 has, when its lens is in the extreme telephoto position focused on infinity, foreground ob-

Michael O'Reilly is an award-winning videomaker, who works and teaches in Philadelphia.

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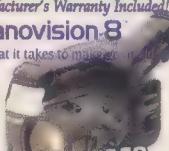
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BY RODERICK WOODCOCK

Technical queries from our readers

Q I have a question about converting TV shows to HDTV. It seems reasonable to postulate that the current *Star Trek* shows, *Deep Space Nine* and *Next Generation*, will not convert to HDTV satisfactorily as they apparently are being mastered in NTSC and NTSC has resolution limitations, especially with color. It also seems reasonable to postulate that the old *Star Trek* series should look reasonably good in HDTV since it was mastered in 35mm film, a format with good resolution. Therefore, even though the effects in the new series outshine the old series, the old series should look better in HDTV. Am I right, or am I missing something.

David Hale
Madison, Alabama

A Both *Star Trek* series were shot in 35mm film, and 35mm film offers resolution far above what either NTSC or PAL can provide. If anything, the film emulsions and lenses used to photograph *Star Trek: The Next Generation* are superior to what was available 25 years ago. And, as companies like Kodak with a vested interest in film technology have pointed out, 35mm film is "high-def ready" in that its inherent resolution exceeds that of any proposed electronic HDTV format.

The problem for shows like *The Next Generation* is that film is only used to generate the original imagery in the camera. Virtually every other aspect of post-production, including editing, is done in the electronic domain. Once the film is converted by telecine to tape, the film is returned to Paramount, almost exactly as it came from the camera. This contrasts to the original *Star Trek* series, as well as most film programs of the '60s and early '70s, which were shot and edited in the classic way: by cutting the original film negative and making film prints that were then broadcast on TV by telecine. *The Next Generation*, however, is edited on tape for 525-line NTSC format requirements. The edited masters exist on NTSC tape, not on film, as they do for the original series. Many other programs shot these days are in the same category.

The dilemma for the studios is that if and when there is a demand for

HDTV versions of these programs, the tape masters won't be up to the task. The original film negatives would be, but each episode would then have to be re-edited to match what was originally aired on tape.

For the moment, HDTV is not a pressing issue for Hollywood. While newer technologies like computerized editing systems are being used to help edit both feature films and TV shows, only the films continue to be cut on negative, as the step is necessary for making the "release prints" used in theaters. But for future HDTV use, it's certainly true that the final step of editing on film isn't always being carried out, and whether it ever will be is a decision that hasn't yet been made.

Q I just bought a new Sony EV-S7000 Hi8 recorder to go with my TR101 camcorder. I've had the camcorder for about a year, and now have a couple dozen tapes I would like to edit. Which machine would you suggest I use as the player and which as the recorder when editing my tapes? Victor Chang

Palo Alto, California

A As a rule, a tape plays back best on the VCR that made it. This is especially true with camcorders, many of which use smaller mechanical transports that can introduce jitter and other tape interchange problems if another machine is used as the player. In the case of the Sony TR101, the smaller head drum is more jitter prone than the larger drum used in later models or in Sony's table-model VCRs. Using the TR101 as the player prevents many of these problems.

However, the tinier transport is painfully slow when it comes to winding tape, and excessive shuttling of original footage from point-to-point can induce dropouts. The EV-S7000, on the other hand, has a faster transport, a timebase

Address questions to Q&A, Video Magazine, 460 West 34 Street, New York, NY 10001; fax to 212-947-6727; or send via CompuServe to 75147,1255 or via The Internet to 75147.1255@compuserve.com. Questions may be edited for space.

corrector, and two levels of digital noise reduction to help tweak images. It can also take advantage of Sony's RC time code. Your TR101 records RCTC on the tapes it makes, but can't read it for editing. Using the EV-S7000 as the player overcomes this limitation. The EV-S7000 can also generate copyable special effects like still frames and slow motion tricks, due to its digital circuits. The TR101 can't match these effects on playback.

If you want to add additional audio to your footage, you'll have to do that in the EV-S7000, which offers the dubbable PCM audio tracks. Tapes made on the TR101 leave this space open for later dubbing, but no dubbing is possible on the TR101 itself, although some often use mixers to combine audio sources going from the playback VCR to the record VCR. Note also that since the TR101 is a single-speed VCR, it uses wider video heads than the EV-S7000, which offers SP and LP recording, and needs slightly narrower heads as a result.

The bottom line is that I would use the EV-S7000 as the player and the TR101 as the recorder, as it's the most versatile scenario.

I want to buy a new camcorder, and I like the Hi8 format since it has lots of bells and whistles. I was looking at the Sony TR700 and the Canon ES1000, both Hi8 models. Then, I was dazzled by the great digital effects on the JVC GR-SZ7, an S-VHS-C machine. I'll use the camcorder mainly for fun with friends and family. But I like fooling around with features and effects, and I'll probably do some home movie skits with my kids. Picture and sound quality are important as is image stabilization. Which of these camcorders should I buy? I can't decide.

Alan Kassan
Encino, California

Both the Sony and the Canon models employ an optical image stabilization system that the companies jointly developed. The JVC uses an electronic image stabilizer, as do some other camcorders made by Sony. Both systems provide comparable degrees of image smoothness, although the optical systems seem to be more fluid. However, the electronic system is less expensive to manufacture and should be less costly to fix if it breaks.

All three models use excellent lenses, with resolutions that exceed the requirements of Hi8 and S-VHS. For most purchasers of high-end camcorders, who usually end up editing their tapes by copying them into another VCR, the format issue isn't that important, as long as the image quality is high. In this regard, the JVC at the SP speed can clearly hold its own against the two Hi8 models. At the EP speed, I'd have to give the nod to the Hi8s, since video noise at EP does go up a bit, even with S-VHS.

The JVC is packed with features, and is comfortable to hold, while the Sony and Canon models offer the LANC editing protocol, an asset if you do critical editing. If you do edit, consider the format you want your footage to end up on. Many Hi8 fans edit to S-VHS, rather than to Hi8. There are more S-VHS decks to choose from, and they're less expensive. Audio editing on S-VHS is also easier, since you have a dubbable linear audio track.

Which should you buy? I can't tell you that from what I know of your needs, but now that you know some of the trade-offs, maybe you'll find it easier to make up your mind. ■



AUGUST 1994

- Innovative New Products for Fall
- How to Choose Lights & Tripods
- Videotests: Panasonic Combi Player, Sharp Hi8 Camcorder, ProScan VHS-C Camcorder



SEPTEMBER 1994

- The Basics of Video Editing
- 20 Universal Remotes Compared
- Videotests: Vidikron LCD Projector, Canon Hi8 Camcorder, Studio Magic Desktop Video Package



OCTOBER 1994

- Preview of New Digital Satellite Systems
- CES Review—What's Hot, What's Not
- Videotests: Goldstar VHS/8mm VCR, Sony Hi8 Camcorder, Toshiba 56-inch Widescreen TV, Pioneer Combi Player

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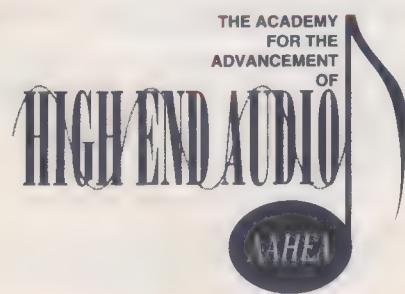
IT'S THE EXPERIENCE THAT COUNTS!

Those of us in the High End audio trade have seen our industry and the art of better sound move boldly forward in the '90s. Multi-channel audio/video systems have created a new role for High End audio as the defining element of the *experience* that separates "merely good" and "great" home theater.

In the '70s it was "numbers." Get the distortion low enough, the frequency response wide enough, and the signal-to-noise high enough, and it must sound good. In the '80s, subjective sound quality was what mattered most. In the '90s, great sound must move and involve the listener in the music or movie experience.

Sure the picture counts, but great sound makes the experience of home theater come alive. The Academy and its members welcome this challenge.

**Chris Browder, B&W Loudspeakers,
President of the Academy for the
Advancement of High End Audio**



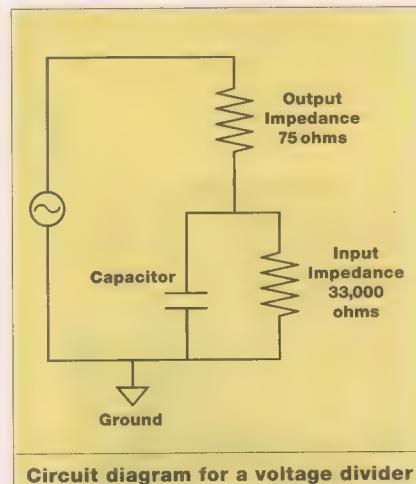
This column is presented by The Academy for the Advancement of High End Audio, an organization dedicated to the recognition of excellence and the promotion of greater awareness of high end audio.

ENTERTAINMENT
A HIGH END AUDIO PUBLICATION

READER FORUM

Laserdiscs, treble and re-equalization

"Fight the bright: Why Your System's Treble is Probably Too High" ("Home Theater," Dec. '94) by Brent Butterworth contains a number of significant errors, one (outlined in my final comment) so serious as to render the article pointless. First, the article states that "To compensate [for reductions in high-frequency sounds in movie theaters], sound engineers apply a treble boost called X-curve." The X-curve is not a treble boost. It is the frequency response of a sound system measured with microphones in a dubbing stage or properly adjusted theater, and it shows a



Circuit diagram for a voltage divider

high-frequency roll-off. Although the recorded treble is boosted partly to compensate for this roll-off, the amount of the boost used is not the equal and opposite amount of the roll-off.

Second, Mr. Butterworth writes that "Many laserdiscs are mastered with the X-curve intact. Others are re-equalized during the film-to-video-transfer." This errs in degree: It is rare for a laserdisc transfer to be re-equalized. A survey of transfer houses showed that laserdisc releases are considered sacrosanct compared to tape releases, and that monitoring during transfer is for problems like phase inversion, dropouts and the like. The intent of the producer is assumed to be recorded insofar as bass to treble balance goes.

When we looked at the problem in the late 1980s we found there were already about 3,500 laserdiscs that were not re-equalized. To have started to put

re-equalization in the transfer would have made a new class of disc, which would not have needed processing in playback. We felt it was better to conform to the vast quantity of discs on the market than to promulgate a new standard. Thus, we put re-equalization in the controller, not the transfer. And thus the article's statement that the only way to assure you are getting the proper equalization is to use THX discs on THX controllers is wrong. Virtually all film-originated discs should use re-equalization. Discs that do not need it are operas, exercise videos and the like, which were clearly not monitored in an X-curve dubbing stage.

Third, Mr. Butterworth perpetuates a myth when he writes that absorptive home theaters soak up highs and thus sound duller. In fact, the more absorptive a room, the brighter the sound will be. In less absorptive rooms, the average path of all sound from the loudspeaker to the listener is longer because reverberation is more prominent. A longer average path means greater absorption of highs, since air absorbs high frequencies more readily than lows as sound travels through it.

Fourth, Mr. Butterworth writes that voices are the key to hearing that re-equalization is correct. While true, there are other strong indicators. We also listen for the balance of small, generally low-level sound effects like the rustle of clothing to hear whether the balance on Foley effects is right. Interestingly, it is sometimes hard to tell on music, since taste dictates so strongly what has been recorded. For a scene that shows multiple effects, consider *Indiana Jones and the Temple of Doom*. In the first scene when Indy enters, comes down the stairs, and sits and talks with the bad guy, the sounds of napkins at the table, champagne pouring and clothing rustling are just as good indicators as the hard sounding vowels in the dialog. This was the scene that first attracted me to re-equalization, because the transfer would A/B perfectly in a double-blind comparison with the original master, but it sounded too harsh over a great sounding music system. Thus re-equalization was born.

Finally, Mr. Butterworth writes

continued on page 74

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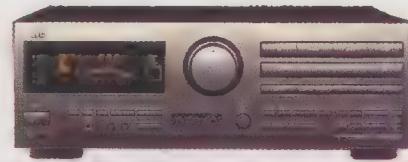


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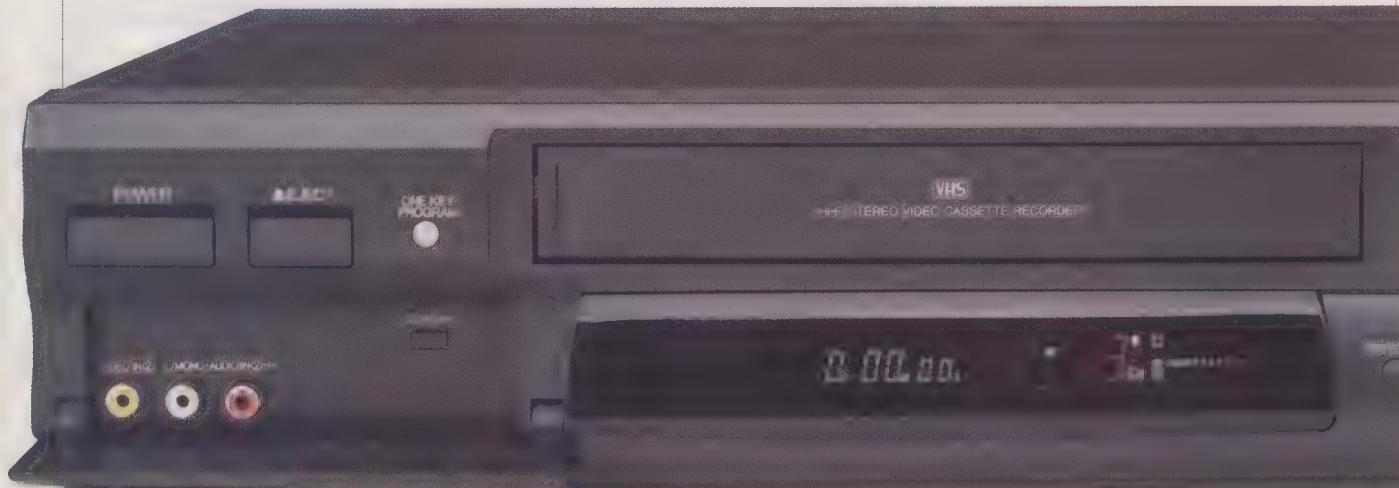
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VIDEOTESTS



MITSUBISHI VHS-VCR



By Stewart Applegath

Mitsubishi's new HS-U550 hi-fi stereo VHS VCR offers a number of features that simplify the recording and playback of your favorite material.

At first glance the U550 seems to include features, like a jog/shuttle unit, that you would expect to find on an editing VCR. However, the U550 is not designed as such. Instead, it provides a good, sharp picture with useful timeshifting and tape quality-control features, such as VCR Plus and PerfecTape.

The HS-U550 is the top of Mitsubishi's series of mid-level VCRs, one step below decks configured for editing. As a result, you won't find features usually associated with editing decks, like audio/video dubbing, edit

SPECS AND MEASUREMENTS

Brand & Model:

Mitsubishi HS-U550

Weight & Size (h/w/d):

12.3 pounds; 3-3/4 x 16-3/4 x 13-3/8 inches

Power Use:

29 Watts

Jacks: front-video, left and right audio; rear input-RF, video, left audio, right audio, AV network; output-RF, video, 2 left audio, 2 right audio, AV network, cable box control

Tape Format & Speeds: VHS HQ; record SP, EP;

play SP, LP, EP

Video/FE Heads: 4/0

Cue & Review Search:

9x SP, 27x EP; variable with jog/shuttle dial on VCR and buttons on remote

Fast Forward/Rewind

Time: 4-1/2 min. for blank T-120

Remote Control: MBR IR wireless for TV & VCR

Program Start Locator/Index/Cue: auto/manual mark, manual erase, bi-directional search for up to 19 marks

Analog Audio: linear

MITSUBISHI HS-U550 VHS VCR

PRICE: \$499

V-RATING: VVVVV

BETTER →

**PICTURE
SOUND
FEATURES
VALUE**

RATINGS ARE RELATIVE TO THOSE FOR OTHER VHS VCRs.

jacks and flying erase heads, which give you the ability to make clean "rainbow-free" joints between segments of transferred material. Nor are there picture adjustment controls, such as those on Mitsubishi's top-end HS-U770. The U550 seems to have been designed for buyers who want easy and variable playback of their videos, reliable timeshifting, and a good picture.

(dB): unweighted video

40.6 SP, 37.6 EP; weighted video 50.4 SP, 47 EP; chroma AM 46.2 SP, 41.2 EP; chroma PM 44.8 SP, 41.4 EP

Audio Frequency Response: hi-fi 20

Hz-12 kHz, +0/-3 dB, -37.9 dB at 20 kHz; linear to -3 dB 100 Hz-10 kHz, SP, 75 Hz-5 kHz EP Hi-Fi

Dynamic Range: 75.6 dB

Linear Audio S/N: 39.3 dB

Audio Distortion: hi-fi 0.3%; linear 0.1%

The front panel layout is simple and offers controls for most of the U550's major features. You can get along well without having to resort to the remote control. Power, eject, one-key programming, display and audio/video line 2 input jacks are located to the left of the display panel while the playback/record controls, One Touch Recording and the PerfecTape features, are on the right. The display panel outlines most of the system's operations.

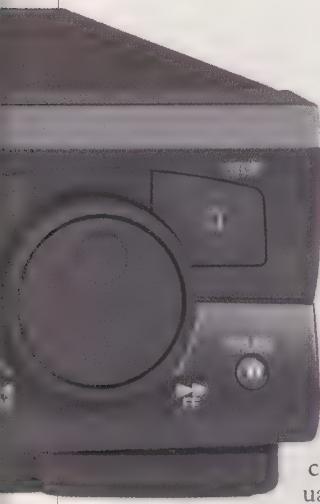
The HS-U550's new PerfecTape system automatically adjusts the VCR's recording circuits for the best possible recording at any given moment. When



Multiburst pattern shows a significant signal output at 3 megaHertz, indicating good detail.

you push the button, the U550 runs a quick test on whatever tape you've inserted in the VCR and analyzes the results. PerfecTape can also be used on previously-recorded tapes, but has to erase about one second of tape to analyze it.

When you push the PerfecTape button once, a notice appears informing



tells you the results. The process takes about eight seconds, and a little indicator in the display flashes while the test is in progress. The testing process can be aborted at any time by pushing the stop button.

Mitsubishi has also simplified the timeshifting process with VCR Plus and the One Key Program button on the front panel. VCR Plus facilitates one-step recording of TV shows by allowing you to enter the PlusCode number found after program listings in your TV schedule. This number "tells" the deck

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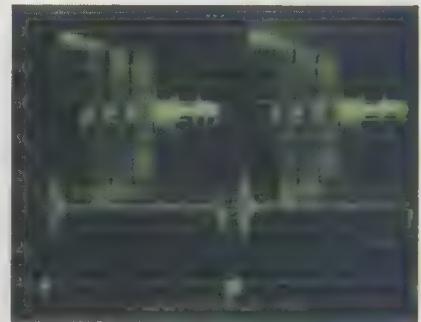
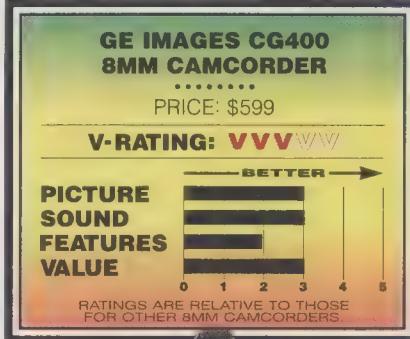
you that it will record over a bit of tape. When the button is pressed again, three bar graphs appear, representing the high, medium and low frequencies being evaluated, followed by another that

GE 8MM IMAGES CAMCORDER



By Stewart Applegath

When we tested GE's recent CG818A 8mm camcorder (April, '94), we were impressed with its performance, given its low \$649 price tag. GE now goes even lower on price with its new CG400 8mm camcorder. While this camcorder may not be for everyone, at \$599 it provides an inexpensive starting point for those who want to get their feet wet in video. The camcorder's completely automated functions make it extremely easy to use, and it works well in situations



Multiburst shows a surprisingly good pattern compared to those for costlier camcorders.

where manual control is not important.

A lot of camcorders, of all formats, pass through our doors. Within each format, manufacturers tend to pursue similar goals. Consequently, it's always a pleasure to see a piece of equipment that tries to separate itself from the crowd at a remarkably low price. The CG400 is the most inexpensive 8mm camcorder we've ever tested, and while it doesn't offer the full functionality of the CG818A, it has much to recommend it.

The CG400 combines the advantages of the 8mm format—small size,

continued on page 35





Two in One:
The TVCR's well-designed remote has clearly designated VCR buttons in a central oval.



TOSHIBA 27-INCH TVCR



By Cliff Roth

The TVCR has come of age. When these combination units first hit the market, they generally combined a small, inexpensive TV with an inexpensive two-head VCR. The result was a compact unit offering all-in-one convenience, perfect for a bedroom, a guest-room or a second home system. Toshiba's new CV27D48 demonstrates that styling, set-up simplicity, and operating convenience can also translate upward into bigger sets with better features.

Besides boasting a big 27-inch screen, the \$999 CV27D48 has MTS stereo sound, a four-head, hi-fi VCR

SPECS AND MEASUREMENTS

Make & Model: Toshiba CV27D48

Weight & Size: 89.1 pounds; 25-3/4 x 26-7/8 x 19-5/8

Power Consumption: TV-109 Watts; VCR-18.5 Watts

Screen Size: 27 inches, diagonally

Speaker Size: two 2-3/4 x 5 inch oval

Type of Tuning: fre-

quency synthesis

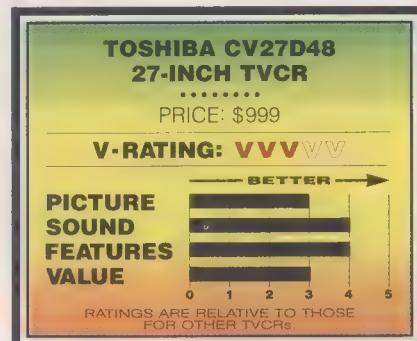
Method of Tuning: programmable scan on set; scan plus direct access from remote

Broadcast Tuning Range: 2 to 13, 14 to 69

Cable Tuning Range: 125 channels-2 to 13, A-8 to A-1, A to I, J to W, AA to ZZ, AAA, BBB, 65 to 94, 100 to 125

Remote Control: IR wireless

Inputs: front-none; rear-video, left audio, right audio



with very good special effects playback, and an attractive design that manages to totally hide the existence of the VCR behind a big hinged door beneath the screen. When this door is closed, only two buttons are visible-on/off, and the

Outputs: rear-variable level left and right audio

External Speaker Connectors: none

Internal Audio Amplifier Power: 3 Watts per channel

Accessories: remote control with batteries, antenna adapter

RESULTS

Horiz. Resolution: TV-380-400 lines; VCR-240 lines

Picture S/N in dB: VCR playback, unweighted:

43.4 SP, 42.1 SLP; weighted, 47.8 SP, 46.2 SLP. Direct: 51.3 unweighted, 54.7 weighted

Screen Brightness: 30 footlamberts when set

Color Temperature: 6,600 Kelvin after calibration

Audio Frequency Response: line out: 50 Hz-20kHz +0.4/-2.9 dB, -5.4 at 20 kHz; speaker 120 Hz-15 kHz

Audio S/N: 67 dB

Total Harmonic Distortion: hi-fi 0.4%; linear 1.1%

one to open the door. Three red and orange lights indicate power, recording, and timer operation.

The picture tube is not Toshiba's highly-rated SuperTube, but it provides good image quality, with very square corners. Horizontal resolution measured 380 lines in our lab tests, which is perfectly acceptable for the intended uses of this set. Of course, using the VCR, horizontal resolution drops to the standard 240 line rating for VHS. Our sample TVCR exhibited a slight one-degree tilt to its geometry; that is, vertical lines on a convergence pattern appeared about a quarter inch closer to the left at the top of the screen, compared with the bottom. This anomaly was likely caused in shipping.

Using a crosshatch test pattern, consisting of vertical and horizontal white lines on a black background, we also noticed a ringing in the picture—the vertical lines bent slightly after intersecting with the horizontal lines. This indicates a set being overdriven in its contrast, or white level, setting. By lowering the Toshiba's contrast level to its midpoint level, the ringing was virtually eliminated. Colors were oversaturated.

With the assistance of Kevin Miller of Total Media Systems (516-777-7058) and a Philips Color Analyzer we calibrated the set's color temperature. When we reviewed Toshiba's 32-inch CN32D90 (Feb. '95), we discovered

continued on page 37

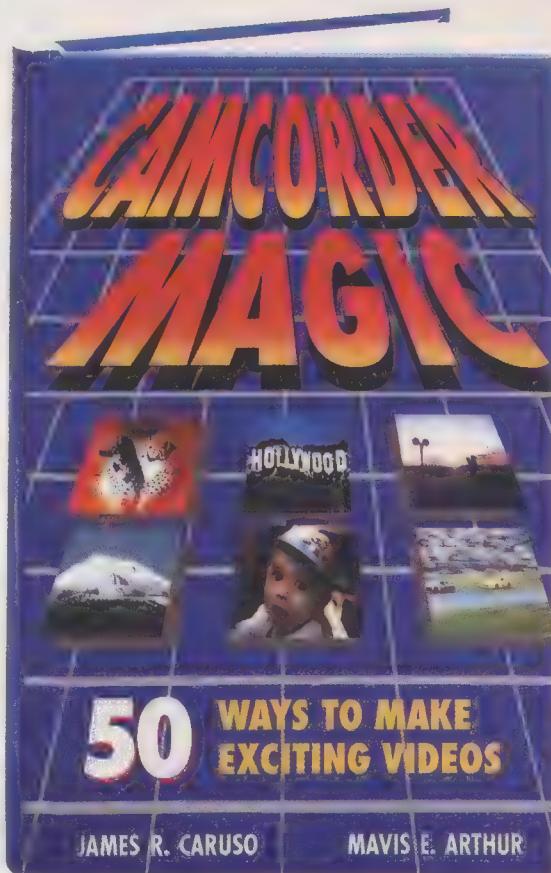
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SHARP VHS-VCR

By Timothy Liebe

Not for the first time, I find myself marveling that features that were available on only the best low-end industrial VCRs two or three years ago are now standard on consumer VCRs. A case in point is Sharp's new VC-H925U, a VHS model priced at \$460. This mid-range, four-head deck comes with VCR-Plus with cable box control, a semi-universal remote capable of controlling your TV set and cable box as well as the VCR, hi-fi stereo sound with MTS (multichannel TV sound), slow-motion playback, a variable-speed shuttle dial, an hours/min-



Multiburst waveform shows a frequency response typical for VHS VCRs.

utes/seconds tape counter, and front as well as rear audio/video inputs.

In addition, small details in the H925's design seem to have been thought through with a higher than average regard for recording and playback quality. For instance, the tape speed default is the high-quality SP mode, rather than the long-playing, lower-quality EP mode. Thanks to the set-up function, accessible via the front panel of the H925 as well as through the remote control's menu key, basic

VCR settings can be programmed quickly and easily.

While initially setting up the VCR-Plus feature can be time consuming, the infrared cable box control on the front of the unit makes the extra effort worthwhile for many people who wish to use VCR-Plus with cable. (A number of cable services require the use of addressable boxes, which means that most channels not broadcast over the air require unscrambling through the cable box. The H925's cable box control ensures that its VCR-Plus will function properly, no matter which cable channel you wish to record.)

Also on the front panel of the H925 are the controls needed for basic recording and playback, all in plain sight, as well as the unit's shuttle ring. The LCD display on the front panel defaults to tape time when a tape is playing; however, you can easily access clock time by pressing the display button on the remote. This is a minor feature, but a useful one.

Among the many pleasing features about the H925's shuttle ring is its ability to vary forward and rear search speed without requiring the user to hold onto the ring the whole time.

SPECIFICATIONS AND MEASUREMENTS

Weight & Size (h/w/d): 7.7 pounds; 3-3/4 x 15 x 11-1/2 inches

Power Use: 20 Watts

Jacks: front-video, left and right audio; rear-RF in and out, video and stereo audio in and out

Tape Format & Speeds: VHS HQ; record SP, LP; play SP, LP, EP

Video/FE Heads: 4/0

Cue & Review Search: SP, 5x; EP, 15x

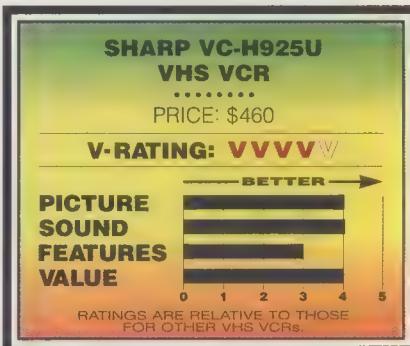
Fast Forward/Rewind Time: approx. 2-1/2 min. for T-120 tape

Remote Control: IR wireless for VCR, TV, cable

Program Start Locator/Index/Cue: index with auto mark and forward reverse search for up to 18 marks

Analog Audio: linear mono; hi-fi AFM stereo

Preset Method: auto with manual add/erase



Also, by employing a technique described in the manual, the shuttle can be used for slow-motion forward playback, again without holding onto the ring. Reverse slow-motion playback is not possible; however, this feature is rarely present at this price level.

If, like me, you've frequently found the "noiseless" pause feature on your VCR to be anything but, you'll appreciate how steadily the H925 holds a still or slow-motion image. Even on tapes recorded in EP mode, the paused or slow-advanced picture was generally rock-steady, with no tracking lines across the bottom of the image and sur-

continued on page 39

SP, 41.3 EP, weighted video 51.7 SP, 50.5 EP, chroma AM 43.6 SP, 40.7 EP, chroma PM 45.3 SP, 41.2 EP

Clock/Timer Battery Backup: 20 seconds

Audio Frequency Response: hi-fi 20 Hz-15 kHz, +0.1/-3 dB, down -39.8 dB at 20 kHz; linear -3 dB 90 Hz-12.5 kHz SP; 75 Hz-3 kHz EP

Hi-Fi Dynamic Range: 71.7 dB

Linear Audio S/N: 41 dB
Audio Distortion: hi-fi 0.3%; linear 0.9%

RESULTS

Horizontal Resolution: 240 lines

Picture S/N Ratios (dB): unweighted video 45

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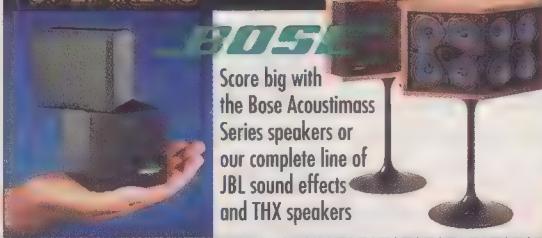
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MAGNAVOX 27- INCH TV

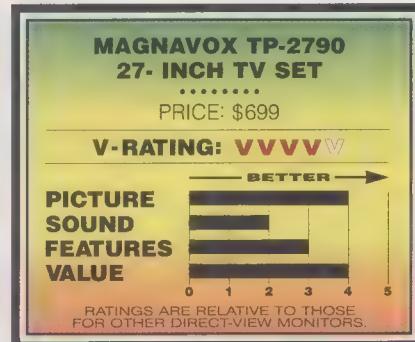


By Kevin Miller

Many people feel you must have at least a 27-inch TV to qualify your system as "home theater."

I agree. I wouldn't consider anything smaller as a true centerpiece to my video system. In fact, 27 inches has become the most popular screen size for use in a full-blown, living-room video system, or as a large bedroom TV. And there are a lot of 27-inch monitors to choose from today at a variety of prices. Enter the TP-2790 from Magnavox with a suggested price of \$699—a very reasonable price considering the features and performance the set delivers.

The set is 125-channel cable ready. It has variable audio outputs, multiple picture-in-picture insets with a preview feature and strobe with external source, and a universal remote for the TV, a VCR and the cable box. This is a fairly



typical feature package for sets in this price range, but the TP-2790 also offers two unique and highly desirable features.

The Remote Locator is a godsend for those with children or a tendency to misplace things. If you can't find your remote, simply turn the TV's power on at the set, and the remote beeps long enough (I counted 30 beeps) to give you ample time to find where the kids

SPECS AND MEASUREMENTS

Brand & Model: Magnavox TP-2790

Weight & Size: 100 pounds

Power Consumption: 216 Watts max.

Screen Size: 27 inches measured diagonally

Speaker Size: two

3x5-inch ovals

Broadcast Tuning Range: 2 to 13, 14 to 69

Cable Tuning Range: 125 channels

Remote Control: IR wireless with buttons for TV, VCR, and cable box

Inputs: front-none; rear-video, left audio, right audio

Outputs: rear variable level, left and right audio

External Speaker Connectors: none

Key Features: remote locator, automatic volume leveler, PIP

RESULTS

Horiz. Resolution: 400 lines

Picture S/N in dB: video 51; chroma AM 61.5; chroma PM 61.1

Screen Brightness: 73.4 footlamberts before

calibration; 28.8 fL after calibration

Color Temperature: 8,750 degrees Kelvin from factory; 6,550 K after calibration

Audio Frequency Response: variable line out 5 Hz-17 kHz, +0.8/-3 dB, -6.4 dB at 20 Hz, +8 dB at 20 kHz; speakers 50 Hz-15 kHz, +/-10 dB

Audio S/N: 62.3 dB

Total Harmonic Distortion: 0.9%

Lost & Found:
The TV's
intuitive remote
can be set to
sound off if
it's been
misplaced.



or the dog stashed it. As simple as the Remote Locator must be to implement, from a technical standpoint, I don't know of any other manufacturer that offers it.

The other feature of note is an auto volume leveler, or what Magnavox calls Smart Sound. Ever notice how much louder commercials are than the regular programs on any given channel? You've set the volume just where you want it, you settle back into your seat with your favorite beverage and—POW!—the commercial practically blows you and your drink out of the chair. Magnavox has addressed this advertising ploy quite neatly with Smart Sound. The Smart Sound control, or automatic volume leveler, control allows you to choose a particular volume level as that ceiling. First, you press the Smart Sound button on the remote and "Auto-Volume" appears onscreen. Then you press the Smart Sound button repeatedly to turn the volume level control on or off. While the feature does not precisely control sound levels, it gives you a more consistent, even sound level by reducing the peaks and valleys that occur during channel and program changes.

Two features the Magnavox lacks are a headphone jack and a front panel input jack for convenient camcorder hookup.

Looked at straight out of the box, the picture on the TP-2790 was overdriven and quite blue on the gray scale, as is typical of many of today's TVs. My trusty Philips Color Analyzer measured

a color temperature that ranged from 8,750 degrees Kelvin on the top end of the gray scale to over 16,000 degrees Kelvin on the bottom of the gray scale, where the blue shift becomes much more visible on regular program material.

The set measured a peak light output of 74.3 footlamberts. This is more than double the standard, which is 30 footlamberts, for light output on a direct-view TV. Opening up the set revealed all the necessary drive and bias controls to properly adjust the color temperature to the industry standard of 6,500 degrees Kelvin. Given that the TP-2790 is a relatively inexpensive set not targeted toward high-end consumers, the presence of these controls was a pleasant surprise. Magnavox deserves credit for giving viewers the ability to have the set's color temperature calibrated by qualified technicians.

After adjusting the set to 6,500 degrees Kelvin from the top to the bottom of the picture, the set tracked the gray scale almost flawlessly, a feat of which few consumer sets are capable. The high output window read 6,550 K, and the set was stable, holding that number all the way to the lower output win-

dow where it finally dipped to 6,380 K on the lowest IRE window, with a peak light output of 28.8 footlamberts, almost exactly the reference standard.

This makes the TP-2790 one of the most linear, or consistent, sets I have ever tested. When I compared it to my reference direct-view set, the 31-inch ProScan PS-31122, I saw an incredibly similar image. The main difference was that the Magnavox exhibited overly saturated colors even after it was adjusted using Reference Recording's A Video Standard test laserdisc and the filters for color and tint.

The Magnavox, like all other TVs today, is shipped with settings that make the picture look too bright and the contrast too high. (Believe it or not, there is such a thing as a picture that's too bright.) The biggest drawbacks of these high settings are that you completely lose deep blacks, because the brightness is too high, and you see an image with excessive picture noise because the contrast is too high.

The best way to appreciate these characteristics is to put a properly calibrated TV next to one that's running with its factory settings. Such a comparison will show how much better the col-

ors can be and what you're missing from the picture, but it's not a set-up that most consumers can easily find or arrange. On the Magnavox, I found all the front-panel controls to be set at or near the middle positions. After adjustment, all of the levels were set around the one-quarter mark, except for the tint control, which was set slightly higher.

Convergence was not as good as on my ProScan, or on many other direct-view sets I've seen. There was a severe bend on the needle pulse pattern indicating a weak power supply. Lowering the contrast helped straighten the pulse-pattern line. Most TV manufacturers, whether direct-view or rear-projection, have significantly improved their power supplies recently. This allows you to get better contrast out of the set in its best operating range. I would say the Magnavox's relatively weak power supply is the set's biggest shortcoming, and one that could be easily and inexpensively fixed on future units.

I found the remote control to be intuitive and easy to use, and I am usually fussy about remotes. The key function buttons are larger than the rest and easy to locate, and many readers will

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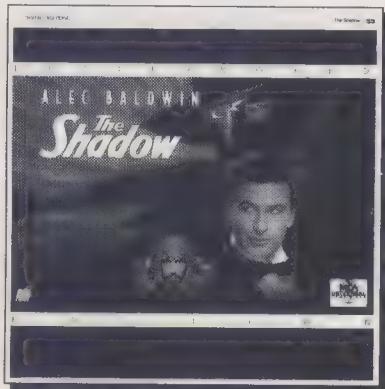
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find the Remote Locater to be quite useful. If this remote were backlit, it would be nearly perfect.

The sound is stereo and average, about what you should expect from a moderately priced 27-inch set. For better sound you invariably have to invest in an outboard system. Two 3-by-5-inch drivers deliver a sound that is harsh when you set the levels too much above the halfway mark on the onscreen graphic. The Smart Sound feature was especially impressive. It's a feature many people will use and enjoy.

When I finished adjusting the settings, I found the picture quality to be excellent. My only quibble is the overly saturated color, mostly on flesh tones and reds. The TP-2790 delivered a crisp, clear image. If you are in the market for a 27-inch TV, this Magnavox is worth a serious look. ■

MITSUBISHI VCR

continued from page 27

to record the program at the appropriate time. With the One Key Program, you can program the VCR (in any of three languages) for timeshifting material, calling up the necessary menus in sequence, and expedite recording when you don't have time to navigate menus.

The jog/shuttle dial on the front panel serves a number of masters. Instead of including discrete fast forward and rewind buttons on the front panel, Mitsubishi has designed the VCR so you can trigger these functions by turning the shuttle ring to the left or right, while in stop mode. In pause mode, the shuttle ring can be used to adjust speed from slow motion up to high-speed playback, forward or reverse. In regular playback, you can use it to forward or reverse the tape, but only at regular playback speed or faster.

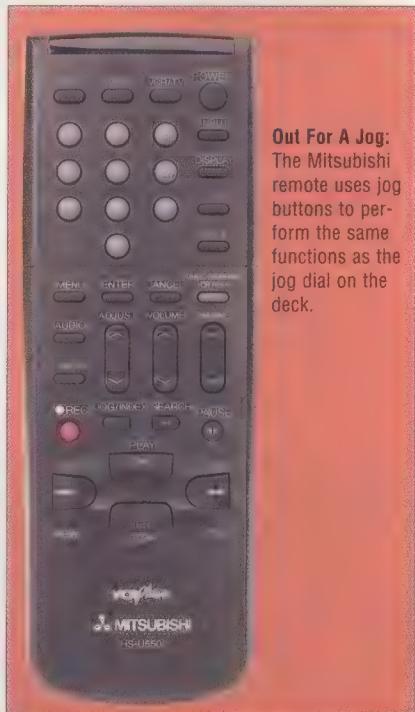
In pause mode, the jog dial moves the tape frame by frame, and can do so in five speed increments in forward and reverse. At slower speeds, the advance mechanism is not continuous, but pauses a bit every third or fourth frame; the result is slow motion that is not as smooth as it could be. You can also use the jog to change channels or adjust tracking and picture vibration. Here, you push the One Key Program button and turn the jog dial until the picture is clearer, then push the button again to resume auto tracking.

With the fast forward and rewind buttons on the remote control, you can trigger the same functions without using the jog/shuttle on the deck. In pause mode, with a picture frozen on the screen, each push of these buttons increases the speed from 1/30th-second slow motion up to high-speed search. I

thought this was a nice feature. You can also use the jog/index search +/- buttons on the remote to advance the picture by single frames. The remote is simply laid out and can be marshaled, to a limited extent, for use as a universal control unit. In this way you can operate a number of brands of TVs, and cable boxes as well as your VCR.

I was surprised by the quality of the picture on the U550; it displayed a sharp image with good detail. The detail came with a bit of extra noise, but not enough to be distracting. There was a slight bleeding of colors and a somewhat low chroma output, which resulted in a slightly muted picture. Overall though, a pleasing picture: except for the chroma output and extra noise, the U550 compared well with the top-of-the line Sony SLV-920HF.

When it came to audio, the U550 could have performed better. Though the hi-fi dynamic range was acceptable,



Out For A Jog:
The Mitsubishi remote uses jog buttons to perform the same functions as the jog dial on the deck.

there was a major high-frequency roll-off which we measured at a steep -37.9 dB at 20 kHz. Anywhere in the range of -3 to -7 would be considered average performance in this category. This characteristic gives the high frequency parts of a recording a somewhat dull sound.

There are two sets of RCA jacks on the back panel for stereo and mono audio output, one set for stereo or mono input, and one for each video input and output. In addition, Mitsubishi has added connections for Active A/V Network, which allows this VCR to perform automated functions with other Mitsubishi products.

While the audio performance could have been better, the HS-U550's pleasing

picture quality and features, including a versatile jog shuttle, VCR Plus, a functional remote and a tape analysis feature, enhance its performance and value as a timeshifting and playback deck.

TECH TIPS

Growth industry

If you want to track your child's growth, periodically videotape the child against a fixed background. Place the camcorder in the same position each time. Even if you only shoot a second of tape each week, in a few years you'll have an irreplaceable video. Masaaki Sawada Waterloo, Canada

Cut and paste

When videotaping objects with the intention of transferring them to a PC, shoot them on a sheet of white paper. This makes it unnecessary to "cut out" the background on your PC before pasting the object elsewhere.

Hi Sawada

Montréal, Canada

8MM CAMCORDER

continued from page 27

long recording time, a good picture—with a no-frills, point-and-shoot simplicity. You won't find any bells or whistles here. There is no electronic viewfinder, no microphone or headphone jacks, no remote control and no infrared remote. You also won't find a

SPECS AND MEASUREMENTS

Brand & Model: GE CG400

Weight & Size (h/w/d): camcorder 1.55 pounds without battery or cassette; battery 0.4 pounds; 4-1/8 x 3-3/4 x 7-1/4 inches

Power Use: 6 VDC, 4.5 Watts approx.

Image Sensor: 1/4-inch CCD

Lens: F2.4-3.5; 3x (3.6-

10.8 mm) power zoom

Minimum Focusing Distance: wide-angle, 6 inches; tele, 4 feet

Autofocus: none, fixed

Viewfinder: through-the-lens, with diopter, LED indicators for record/pause and warning

Viewfinder Controls: diopter focus

Microphone: mono electret condenser

Jacks: video out, DC out, audio out

Tape Format & Speeds: 8mm; SP

shutter-speed/white balance control, a fader, an iris adjustment, backlight compensation or LANC functions. The camcorder shoots automatically and plays back. That's about it. And while the non-feature list is long, it is deliberate: This camcorder makes a statement about simplicity.

The CG400's controls are few and simple to use. There is a power on/off switch and record button on the back of the camcorder along with an LCD dis-

Video/FE Heads: 2/1

Cue & Review Search: 9x/7x

Fast Forward/Rewind Time: 6-1/6 min. for 120 min. cassette

Remote Control: none

Analog Audio: linear-

none; hi-fi AFM-mono

Titles/Graphics: none

Key Features: fixed focus, blank tape search, LCD status display, battery level indicator

RESULTS

Horizontal Resolution: camera-300 lines;

recorder-240 lines

Picture S/N Ratios (dB): unweighted video 43.2, weighted video 48.6, chroma AM 44.4, chroma PM 43.8

Min. Illumination: 9.2 lux for 50 IRE

Approx. Battery Life (man. focus/no zoom): 80 min.

Audio Frequency Response: 50 Hz-7 kHz, +0/-3 dB; -8.1 dB at 20 Hz, -5.3 dB at 20 kHz

Hi-Fi Dynamic Range: 64 dB

Audio Distortion: 0.3%

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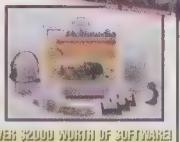
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play that indicates basic functions: battery life, tape/eject, record/pause, time elapsed and warnings. Nearby, on top of the camera, is a simple one-touch button for play and camera modes.

The optical, non-electronic viewfinder is the most noticeable feature when you pick up the CG400. It is similar to that found on Sony's 8mm SC-5 Handycam Snap. The viewfinder, with diopter focus, is above the lens when looking at the front of the camcorder. Unlike the Snap, the CG400 has a manual 3x zoom, and the zoom's small mechanical lever is well-placed, close to your shooting hand's index finger. When you use the zoom, a lens moves inside the viewfinder to show you the equivalent of what the camcorder lens sees.

This is a mechanical, not an electronic viewfinder/lens arrangement, but there have been times when I've yearned for this kind of control. It allows you to zoom as fast or slowly as you like, and you can get a relatively smooth zoom action once you get used to it. GE has also included two LED indicator lights in the eyepiece to indicate record/pause and warnings.

The focus mechanism on the

CG400 is not automatic, but fixed. You won't have to worry about focus-hunting. Everything that's more than six inches from the lens will be in focus, although the system needs a bit more light than an automatic system to be completely effective. Combined with an automatic shutter speed of 1/60 of a second, you have great simplicity, but within a limited range of operating conditions. It's clear, however, that GE designed this model for basic, not high-end shooting.

GE has included a lens cap that works quite well. With a push-and-twist action, it fits securely and covers both the main lens and the viewfinder lens, and stays on better than those found on camcorders twice the price.

The playback and eject buttons are hidden under a flip-up panel on top of the camcorder. Included here is a blank tape search function that partly compensates for the absence of an electronic viewfinder. In either play or camera mode, you can use this button to find where you left off recording or playing. This saves you the chore of connecting the camcorder to a monitor to find your starting place.

A small, Sony NP-55-type battery fits into a compartment on the lower side of the 400, opposite the handgrip. The battery ran approximately 80 minutes in uninterrupted record mode, although it didn't last nearly as long when used in a day-to-day manner: on/off, start record/stop, then playback. As usual, it would be wise to pack more than one.

The picture quality is slightly below camcorders with higher pricetags, but definitely better than some, such as the Sony SC-5 Handycam Snap. There was some luminance noise but the color accuracy was quite good. We saw approximately 230 to 240 lines of resolution in the recorded image.

Audio was just about average. From a measurement standpoint, we noticed more high frequency roll-off than is normal on an 8mm camcorder of this type. Its hi-fi dynamic range was fair and its distortion normal. There was little transport noise leakage. The on-board microphone also worked quite well.

The CG400 has RCA mono output jacks with a rubber cover to keep the elements out. Like the Samsung SCX904, the 400 comes without an RF output adapter; it's available as an optional accessory. We would like to see this included as a matter of course, so non-videophile users can connect the camcorder to all types of TV sets right away.

This camcorder was not designed for serious videographers, but for novice

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or casual videographers, many of whom prefer to do without the bells and whistles more serious videographers love. The simple systems on the CG400 will be a boon to those who don't like fussing with controls. At such a low price and with such great ease of use, this camcorder is a solid choice for an inexpensive, no-worry camcorder that's fun to use. ■

27-INCH TVCR

continued from page 28

that set could be calibrated with the remote control through an onscreen service menu. Though that great feature is not a part of this lower-priced model, we were able to calibrate the CV27D48 almost as easily.

The color temperature of the set straight out of the box was 12,500 degrees Kelvin, with a shift toward blue on the left side of the screen and toward yellow on the right. It was much bluer at low signal output levels, at over 16,000 degrees. However, the set calibrated beautifully to a very stable 6,600 degrees K.

Good gray scale delineation and a well-controlled power supply were evident. The picture showed good brightness. Color adjustments could not be made exactly, as there was still a slight oversaturation. All in all, the set performed strongly. Without calibration, we recommend that the contrast be adjusted to its mid point or below. At this level, colors will begin from a bluish starting point, which is not at all uncommon.

The VCR in the base of the set exhibited above average picture quality for the VHS format. Picture noise was acceptable. It was most noticeable in the red and magenta areas of a color bar test pattern. There was also some bleed at the borders between colors, but at a level normal for VHS.

Still frame (field) and slow motion playback (at 1/7x and 1/15x speeds) were excellent, and completely free of noise bars. Double speed playback was also excellent. The deck's rapid picture search, at speeds of 5x (SP) or 15x (SLP), locks when you press the fast forward or rewind buttons momentarily during play.

Holding them down continuously moves the tape even faster—at 7x or 21x speeds. All VCR display indicators, including the ones for elapsed time and remaining tape, appear onscreen. There is no separate display panel for the VCR (and no flashing clock display). No separate eject but-

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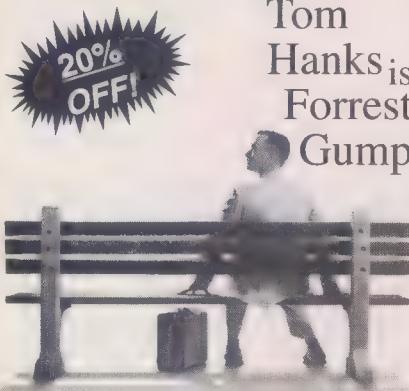
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ton is provided—it's the same as the
stop button.

The inclusion of both MTS stereo
sound and VHS hi-fi provide the
TVCR with a strong audio department.
Toshiba rates amplifier power at
three-watts per channel; and each
single-element speaker is 2.75 by 5
inches. Considering the power levels
and the size of the speakers, the audio
is quite good, especially for a TVCR,
although lacking in the bottom end. I
cranked the volume all the way up to
its maximum level, and the sound was
loud and surprisingly distortion free.

An audio submenu provides bass,
treble and balance controls, as well as
a switch to turn the speakers off. A set
of variable level audio output jacks
are provided, for hookup to a stereo
system, but there's no headphone
jack. The MTS button on the remote
also chooses between listening to the
hi-fi or mono track.

One great audio feature is that
when tapes play at double speed, you
hear the sound, although at a high
pitch. This is a feature that's useful
for tape cuing.

Tuner sensitivity appeared good,
judging by subjective tests with a sim-

ple antenna. Channel setup is very
easy and flexible, and there's a
parental lockout feature. There are
no special editing features, other than
a set of rear-panel A/V line input
jacks for watching laserdiscs or for
working with a camcorder. There is
no video output jack, and only one
antenna input.

A wonderful circular clock display
appears on the screen for setting the
clock. A rotary adjust knob makes
clicking noises, similar to an old fash-
ioned clock-radio for setting it. But
you can only set the clock at the TV,
not by remote, and you cannot set the
program timer this way. Toshiba calls
the feature Analog Clock. A conven-
ient Daylight Savings Time adjust-
ment quickly advances or retards the
time by one hour.

Two clock faces appear on the
screen for one-touch recording. But,
as with the clock, setup is not avail-
able from the remote, and it's confus-
ingly labelled. The first thing you
must touch is the clock-radio style
knob. There is no one-touch record
button as such. The sleep timer is
labelled Timer, instead of Sleep. After
pressing it, you must enter one, two or
three numbers to set the three-digit
shut-off time. Entering the numbers
06, for example, sets the sleep timer
for 60 minutes.

The six-event program timer
doesn't tell you to set the clock before
setting the timer. You must already
have a tape in the VCR to program
the timer, but the instructions don't
make this clear. If you make this mis-
take, as I did, you end up frustrated.
After setting all the timer program
information, the onscreen display
tells you "no timer programming."
(There is no VCR Plus capability.)

The remote-control is very well
designed—especially the VCR buttons,
which are clearly separated in
the middle. A repeat function, rare in
TVCRs, automatically rewinds the
tape and replays it 10 times. This is a
feature that owners with commercial
uses, like store displays and waiting
rooms, may find very useful.

The CV27D48 has good picture
and sound quality, a big screen, very
good special effects and stylistic sim-
plicity. Novices using the more
advanced timer functions may find it
a bit confusing at first. This television
tries hard to offer an extra measure of
user convenience, though its imple-
mentation is quirky. For simple movie
playback, or same-time over-the-air
recording, or basic dubbing tasks, the
set's a breeze to use. Overall, it pro-
vides quite acceptable quality along
with good special effects.

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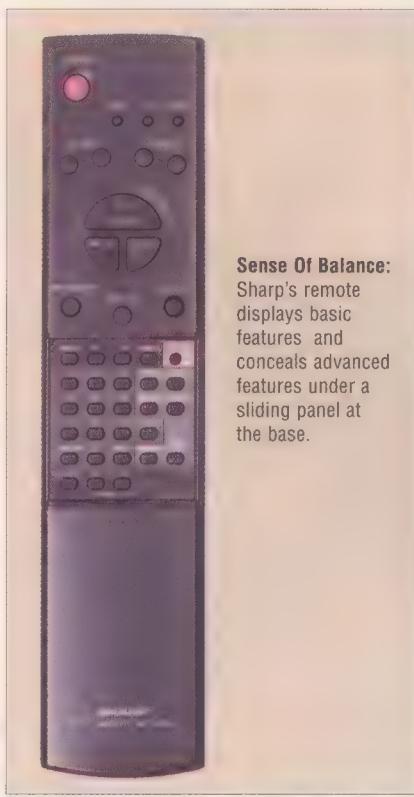
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SHARP VCR

continued from page 30

prisingly little degradation of image quality. This is due in large part to the unit's superb digital tracking capability, which was automatically able to "clean up" the tracking, even on older rental videos.

Since the H925's infrared remote can control not only the VCR, but most brands of TV and cable box as well, it could have very easily been designed with more bells and whistles than *Deep Space Nine's* Ops Center. However, Sharp has come up with an intelligent, if not perfect, solution to the complicated problem of balancing features and ergonomics. Sharp has put only basic features (power, play, pause, fast forward, rewind, volume and channel controls, and buttons for each machine the remote can operate) on the face of the remote; hidden advanced features, including record, behind a sliding panel; and dispensed with a duplicate of the shuttle wheel that appears on the front of the VCR. Instead, the remote includes a slow play control to augment



Sense Of Balance:

Sharp's remote displays basic features and conceals advanced features under a sliding panel at the base.

the fast forward and rewind search functions. The result is a light, well-balanced and easy to use VCR remote (although I would have liked a mute button somewhere).

The picture quality is very good, although there is a slight amount of chrominance bleed with bright reds. Given the nature of VHS, and the deck's otherwise sharp, clear picture and good color quality, this is probably an inevitable trade-off. Linear audio is excellent, but hi-fi audio loses some of the tops of the highs. This is not an issue if you're listening through your monitor's speakers, but you may be a bit disappointed if you hook this VCR's audio up through your stereo system.

Given its price and intended market, Sharp's VC-H925U is a well-thought out, well-designed VCR. While a number of other VCRs offer most, if not all, of the features, few succeed so well in their attention to such details as an easily accessible clock during tape playback, a remote that's neither clumsy nor daunting, and a genuinely noiseless pause. It's this attention to detail that makes me happy to recommend this VCR. ■

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VIDEO ADVERTISER

Q & A

Matt Cooper, Audio/Video Accessories Supervisor at JVC, discusses video editing for the beginner

Q What features and benefits should a beginning videographer look for in a video editor?

A A beginning videographer should look for a video editor that's as simple to use as possible. The editor should be intuitive, immediately allowing the user to do the most important and basic type of editing (which is cutting unnecessary scenes) quickly and easily. The unit should also have compatibility to work with various brands of camcorders and VCRs.

Q Is it better to buy a video editor made by the same manufacturer as your camcorder or VCR?

A The primary equipment of a beginning videographer is still a camcorder and VCR. Therefore, the video editor should be flexible enough to work with most brands and formats of camcorders currently available.

Q Does JVC offer a video editor with this kind of ease of use and "universal" application?

A The JVC JX-ED11 is a new video editor that combines these features and benefits. It has been designed to cut unnecessary scenes quickly and easily. The most exciting feature of the JX-ED11 is that it operates without wire hook up, making it the easiest-to-use editor available. Its universal/learning capability make it compatible with most brands of camcorders and VCRs regardless of format.

Q What are some tips for better video editing?

A Keep production short and simple. Follow the basics of good videography such as avoiding excessive zooming. With editing in mind, remember to slightly overshoot scenes to allow for in and out points. The better the material, the easier it will be to get a great finished video. You can always upgrade with more sophisticated processors and titlers later.

HANDS-ON

continued from page 16

ments, VideoDirector controls your video play and record decks, which are connected to each other as they would be for a normal editing session. The program supports several varieties of edit control, but some require additional hardware. Using a LANC-compatible source and infrared control for the record deck is the simplest, most common combination.

Software drivers are supplied for a wide variety of VCRs. Alternatively, you can use the VCR's remote to program your computer to recognize an unlisted VCR. Installation is simple and straightforward. Connect the camcorder's video and audio outputs to the inputs of the VCR, making sure you've set the proper input. Then connect the LANC cable, and place the IR transmitter in sight of the VCR's front panel.

Using VideoDirector involves three steps: log, edit and make-tape. To log, you use your PC to control the camcorder to play tapes and mark scenes that you may want to keep. Tape names, as well as the

title, start and stop times for each clip, are stored in a tape library. Once you've collected enough clips to make your production, you're ready to edit.

At this point, you drag and drop clips from your library to an event list, which can be viewed as text or in a storyboard fashion. If you have the appropriate additional hardware (an audio or video card), you can add computer-generated or stored sounds and video to your production by adding them to the event list. With an additional serial port and a null-modem cable, you can trigger scene transitions on a Video Toaster. Once you're satisfied with your event list, just click the onscreen make-tape button to start the final production. The computer will prompt you when a tape change is called for.

Don't expect frame-accurate editing with LANC, but you should be able to hit your points within five to 10 frames. RC time code will get you within one or two. LANC accuracy depends very much on the amount of searching you do between scenes: The less the better. The accuracy of both LANC and RC depends on how accurately you calibrate the VCR prerotol through VideoDirector.

Overall, I found VideoDirector 2.0 easy to use and the interface intuitive. It takes some patience, though, to calibrate your tapes by finding easily identifiable frames, and to set the software to compensate for the delays (prerotol) inherent in your video hardware. But for anyone with a 386 or better PC with Windows, and the right video hardware, VideoDirector is a great way to edit video. **-Larry White**

HOME THEATER

continued from page 18

satellites represent a significant advance in surround speaker technology. A "bipolar dipole," the RVSS front and rear tweeters are wired out of phase to produce a dipole radiation pattern at higher frequencies, while the woofers are kept in-phase to achieve bipolar bass coupling, extending the system's low frequency response.

The unusual shape of the RVSS places the front and rear driver baffles at oblique angles to each other, which minimizes boundary reflections and yields an exceptionally room-friendly loudspeaker. Indeed, I mounted the satellites on stands, walls and book cases, at various distances from the listening position, and although I eventually chose final resting places for the surround channels, my results suggest that the RVSS offers remarkable placement latitude.

Ultimately, the goal of an effects channel speaker is to draw the viewer into the

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environment created by a movie's director, and in this the RVSS excelled. The surround satellites provided a deep, enveloping soundspace and added a sense of weight and authority to both musical scoring and special effects without ever calling attention to themselves. What more could one ask of a surround speaker?

While \$1,600 isn't cheap, the Energy Reference Video System is competitive with the best and most expensive home theater speaker packages, and should be considered a bargain. Anyone shopping for a high-end surround system should seek out a dealer. The system is highly recommended. ■

CAMCORNER

continued from page 20

It may seem like I am contradicting myself by saying, on the one hand, that it is necessary to come up with a look that has meaning, then that the viewer often makes his or her own interpretation. But both approaches have merit—and you should use the approach with which you're most comfortable. The crucial step is to sit back and watch and listen to the elements you have put together. Ask friends to watch your rough edit and tell you what they think. Try to get an overall sense of how your tape is coming across, and be open to the way it is being interpreted, even if it's not what you originally intended. Rarely do my own tapes read the way I intend. You may or may not decide to incorporate others' suggestions, but they are always worth considering.

After watching your finished production, viewers may feel that you have produced a work that is only superficial in its beauty, rather than a video that has profoundly explored the world around us in your own voice. That's alright. At least you got someone to watch the whole tape. And isn't that the point? ■

TECH TIP

Going to ground

Before attempting to ground your cable system with a separate rod to improve reception, check with your local building codes office. Since there could be a difference in ground potential between the house electrical system and the cable system, this method may not meet current electrical regulations and may cause more problems than it cures.

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Plan Your Home Theater

Key decisions for dream rooms & 6 systems to help you make them

What makes a great home theater? A giant screen? A killer movie library? A sexy custom installation? None of the above, really. The best home theater system, a subject we debate constantly here at Video Magazine, is the one that gives you—the audience—exactly the experience you bought it for.



A Room of One's Own

BY LANCELOT BRAITHWAITE

Everyone's taste is a bit different, and everyone uses home entertainment in different ways. Some keep the tube or the music system going all day long, lending a background ambience to their time around the house. Others rarely watch TV, using their home theater chiefly for a lights-off, theatrical experience. Some enjoy the stereo while they read or exercise. Others will dim the lights, nestle into the sweet spot and lose themselves for hours.

If you're about to get serious about your home theater, it's important to know what kind of audience you are before you start making home theater purchases. While a good system will do everything well, it's important to choose components that best lend themselves to your own viewing and listening habits.

To help with the process, we asked our editors to design half a dozen home theaters using different starting points, from direct-view TVs to front projectors, from small rooms to big spaces, from a passion for movies to a preference for music. The systems described in the following pages range in suggested price from about \$5,000 to \$50,000. Each system represents a combination of desire and pragmatism. And each system also illustrates a different path toward achieving a satisfying video and audio environment. They'll all deliver top-notch entertainment, and we think they'll also help you think about your home theater goals in useful ways.

Your starting point should be to ask yourself questions about the type of home theater you really want. For example, what's more important to you, movies or music? A good system will show flying colors with both. But a system based around a pair of high-end audiophile speakers complemented by surround sound components is going to perform differently than a matched system of five identical speakers. Or what's more important to you, the size of your video picture or its clarity? Projection TV is the best way to go for the former, but many videophiles feel that smaller direct-view sets still provide the sharpest pictures. Unless of course, money is no object.

Other technical and lifestyle questions pepper the shop-

Home theaters come in all shapes and sizes, and I could no more specify a system for someone I've never met than prescribe glasses. But I can design a home theater to suit my own tastes, and if that task were to begin with a 32-inch TV, I would choose the Sony KV-32XBR95S because of its pleasing flesh tones. For audio, I'd choose the Counterpoint Home Theater speaker system, selected by *Video Magazine* as one of 1994's best products, and powered by the Yamaha RX-V1070 receiver and the Definitive Technology PowerField 1800 subwoofer. The combination yields accurate, powerful sound. My preferred signal source is Pioneer's CLD-703 laservision player, which offers quality equal to more expensive players at a fraction of their cost. The audio system may be a bit costlier and more powerful than some would expect, but nothing can ruin the illusion of an excellent picture as easily as poor sound. I've tested and used all the recommended components, but I would understand if anyone were to look for substitutions. For example, if you feel the audio system is a bit pricey or too powerful for the video in the room, I'd suggest keeping the receiver but switching to Atlantic Technology System 250 speakers and subwoofer. If you wished to substitute a VCR, my choice would be the JVC HR-S690, and so on. The point is not to obey some arbitrary standard, but to please yourself and meet your needs.

Screen

Sony KV-32XBR95S 32-inch monitor/receiver
Suggested Price: \$2,599

Video Sources

Pioneer CLD-703 combi player
Suggested Price: \$1,200
JVC HR-S6900 S-VHS VCR
Suggested Price: \$1,000

Speakers

Five Counterpoint Home Cinema Speakers
Suggested Price: \$2,600
Definitive Technology PowerField 1800 subwoofer
Suggested Price: \$1,599

A/V Receiver

Yamaha RX-V1070
Suggested Price: \$1,349

System Cost: \$10,347



Sony's 32-Inch KV-32XBR95S TV



Pioneer's CLD-D703 Combi Player

ping process. Do you need a lot of dubbing capabilities? If not, maybe you would be better served by better-sounding separate components than by a feature-laden audio/video receiver. How big is your room? That'll determine the best kind of monitor and the degree of amplifier power you'll need. Is the decor

an issue? That would affect your choice in speakers. And most important, if you're upgrading one component at a time, where's the best place to start?

Assembling a system can get pretty confusing, and the only correct answers are the ones that work for you and your budget. So in choosing home theater

HOME THEATER

Grand Illusion

BY ANTHONY CHIARELLA

Despite the endless division of large movie houses into multiplexes, a public cinema is still a large room occupied by an enormous screen and a sound system to match. Grandeur and drama are what movie houses have to offer at their best. And while I admire the resolving power of the latest direct-view TVs and transparent mini-monitor loudspeakers, they fail to immerse me in the full movie experience. Replicating the drama of a movie theater at home requires a large image and effortless audio. Since relatively few have the luxury of unlimited budgets, my choices for an ideal home theater reflect the best value obtainable in each category of component. My best advice: Before you start, find a dealer who wants to work with you and you'll find that your entire system can be had for a substantial discount.

Screen

Pioneer Elite Pro-107 55-inch rear-projection TV
Suggested Price: \$5,500

Video Source

Pioneer Elite CLD-53 combi player
Suggested Price: \$950

Speakers

Energy RVS speaker system
Suggested Price: \$1,600

Energy AS-180 subwoofer
Suggested Price: \$750

Electronics

Lexicon CP-1 Plus preamp/decoder
Suggested Price: \$1,595

Adcom GFA-6000 5-channel amp
Suggested Price: \$850

In Addition

MITerminator2 speaker cable
Suggested Price: \$240/8-foot pair

Interconnect
Suggested Price: \$130/1-meter pair

System Cost: \$11,245 + cables

gear and putting together the dream system, you should be asking yourself some questions. There are so many fine products on the market that choosing good ones becomes easy. But choosing the right ones means making a few decisions in advance.

STARTING WITH A SCREEN

The most obvious decision is what kind of monitor is best for you? Direct-view, rear-projection and front-projectors all have advantages. But in the wrong room under the wrong conditions, they'll also all have drawbacks. You can narrow the field a bit by using a simple formula. Measure the distance between your primary seating area and the spot where you want the monitor to go. The best size for your new video

monitor will be between a quarter and a third of this distance. Let's say, your sofa is 10 feet, or 120 inches, from the monitor: You'll want a screen that measures between 30 and 40 inches, diagonally. Anything smaller is going to compromise the big-screen experience. Anything substantially bigger will probably induce viewing fatigue.

Even if you have the distance for a bigger screen, whether rear or front-projection, size isn't everything. For one thing, a front-projection system is only at its best in a darkened room. That might be fine for tonight's feature entertainment, but do you want the theater room dark all day, even for casual TV or the kids' videogames? A rear-projection TV is an excellent compromise between size and livability, but is there enough

Small Is Beautiful

BY BRENT BUTTERWORTH

The idea that you can't do home theater in a small apartment is way wrong. In fact, small rooms save you money, since you can use a smaller TV, speakers and amps. In the system below, I like the color rendition of ProScan's PS27153, and the Sony VCR and Pioneer combi player give it good signals to work with. The affordable Rotel electronics sound smoother than any receiver I've tried. The Energy subwoofer is the best I've tried in its price range. The tiny NHT SuperZeros sound terrific, and they sound even better if you take off the grilles, and place them upside-down on 24-inch stands.

Screen

ProScan PS27153 27-inch TV
Suggested Price: \$1,099

Video Sources

Sony SLV-920HF S-VHS VCR
Suggested Price: \$649

Pioneer CLD-S201 combi player
Suggested Price: \$535

Speakers

Five NHT SuperZeros
Suggested Price: \$775

Energy AS-90 subwoofer
Suggested Price: \$550

Electronics

Rotel RSP-960 surround processor
Suggested Price: \$600

Rotel RB-956AX six-channel amp
Suggested Price: \$500

In Addition

Target SP60 24-inch stands
Suggested Price: \$70/pair

System Cost: \$4,848



ProScan 27-Inch PS27153 TV



Rotel RB-956AX Six-Channel Amp

MUSIC ROOM

BY RON GOLDBERG

real estate in the room, visually and in terms of space you may need to keep your components properly ventilated?

More than any other consideration, the screen determines the character of your home theater. And since the entire family uses the video screen, there are a lot of factors to take into account. Will you trust your children to use an expensive line-doubled projection set when they want to watch *Sesame Street* or Saturday morning cartoons, when you might still be asleep? Will they be able to figure out the remotes? And are you willing to keep up with the maintenance needs of a projection monitor?

Even after a professional has performed the initial setup, you'll still need to make regular convergence adjustments. It's not a lot of work. Some even enjoy doing it, but not everyone. Maybe you'd just rather slip in a tape and relax?

Sound considerations also depend on the size of your room, and on your taste. Obviously, it takes more sound power to fill up a large space than a small one. But the volume (and sometimes the shape) of your room also determines things like how big your speakers can be, or where they need to be placed. Is there room somewhere for a subwoofer to live without uglifying the room?

If so, you can think about smaller satellite speakers. Is the video monitor going to be against the front wall? Some speakers work well in this position. Others are designed to be placed further out into the room.

Even the design of the speakers will have different effects in different rooms. THX-approved speakers, which are all designed with specific tonal and spatial qualities, are an exception. Properly set up and mated with THX electronics, they'll perform to the THX spec. But a cone-type dynamic speaker will sound different than a ribbon speaker, which will sound different than a bipolar design, which will sound different than an electrostatic model.

What's the effect that's most important to you? Impact? Transparency? Smoothness? What do you listen to besides movies? Classical? Rock? Since music applications are more demanding than movies, except for dynamic range,

the type of speakers you choose will have as much effect on the sound as the screen does for your sight.

CHOOSING TO UPGRADE

When upgrading your system, there's a general hierarchy of improvement that ranges from subtle to dramatic. Assuming that you already have a monitor you're happy with, the most obvious way to improve your picture is to improve your video sources—the laserdisc player and the VCR. If you're happy with your existing decks, the next step in improving the picture is better cables. Low-loss, low-noise wiring can make an appreciable difference for a relatively small investment. Sometimes even the way you route your signal cables—keeping them clear of AC wires and RF cables—can mean the difference between a good and a superb picture.

When it comes to sound, the most dramatic changes are made by changing speakers. Many people who add center and surround speakers to an existing stereo pair find that the new equipment so outshines the old that they end up changing all their components, and that's where you begin to make decisions about speaker design. If the speakers are already satisfactory, a better surround decoder can also make a dramatic improvement, as will more powerful amps and, of course, the wiring.

Be aware though, that sometimes slight (and free!) adjustments to your existing gear can yield appreciable results. For example, good surround sound relies on achieving a critical balance between volume level and timing. In addition to setting surround sound levels, make sure that your three front speakers are more or less equidistant from the seating area. Inches,

Music is a bigger priority for me than movies, so my home theater system consists of primary audio components that have been complemented by video gear. In normal use, which for me is music, the video components aren't even turned on. When I want to watch a movie, I fire up the decoder and surround amps. The front channels of the surround decoder are sent to the preamp, which has a marking on the volume control for proper balance. The center and surround channels go to their own dedicated amps and speakers. Music only goes through the stereo, unless I'm listening to a surround sound recording, while movies go through both the audio and video sides of my rack.

Screen

Pioneer Elite Pro-77 45-inch rear-projection TV

Suggested Price: \$4,500

Video Sources

Denon LA-3100 laserdisc player

Suggested Price: \$1,200

RCA VR721HF S-VHS VCR

Suggested Price: \$749

Audio Source

Rotel RCD-965BX CD player

Suggested Price: \$599

Speakers

NHT 3.3 loudspeakers

(left and right channels)

Suggested Price: \$4,000

NHT VT-1C center channel speaker

Suggested Price: \$320

NHT HDP-1 surround speakers

Suggested Price: \$380

Electronics

Lexicon CP-3 surround decoder

Suggested Price: \$3,200

Three Marantz MA-500 mono amplifiers

Suggested Price: \$299 each

McCormack ALD-1 stereo preamp

Suggested Price: \$1,745

Aragon 4004 MkII stereo amplifier

Suggested Price: \$1,850

Meridian 563 D-A converter: \$1,350

In Addition

Cables by Straight Wire and MIT

System Cost: \$20,790 + cables



RCA'S VR721HF S-VHS VCR

HOME THEATER

Room With a View

BY PETER BARRY

In assembling this system, my chief goal was video quality. For me, this implies front projection. Having made the leap from rear-projection sets up to front projection, with a separate screen, the end quality must make the investment worthwhile. The setup outlined can provide a truly cinematic experience in the home, with a picture that's 100 inches (or more) diagonally. While the set-up is intended for dedicated theater use, it can certainly offer quality music listening as well. The room only requires darkness and a bowl of popcorn.

Screen

Mitsubishi VS-1250 front projector

Suggested Price: \$7,900

Stewart Studiotech fixed

130 gain screen

Suggested Price: \$800

Video Source

Pioneer CLD-D703 combi player

Suggested Price: \$1,200

Speakers

Counterpoint Home Cinema System

with 2 subwoofers

Suggested Price: \$3,300

Electronics

Dwin LD2 line doubler

Suggested Price: \$3,500

Two Acurus 100X3 3-channel amps

Suggested Price: \$899 each

Acurus A250 stereo amp for the subs

Suggested Price: \$995

Fosgate Four processor

Suggested Price: \$999

System Cost: \$20,492

even fractions of an inch, can be surprisingly telling.

Whether they affect sight or sound, these kinds of decisions—compromises between your desires, your budget and your pragmatic concerns—are what will lead you to the right home theater gear. Most great home theaters aren't built in a day. They're the product of intelligent upgrades spread out over time. You might put in a new A/V receiver, only to find that the cleaner sound opens your ears to the fact that your speakers are now the weak link in the chain. You might one day upgrade to better speakers, and realize that you want a better sounding Dolby decoder than the one



Mitsubishi VS-1250 Front Projector



Acurus 100X3 3-Channel Amplifier

you've had for years.

More than anything else, your home theater should be a reflection of your lifestyle. Some people will listen to 20 records for every movie that they watch. For them, a system optimized for music makes more sense. Some viewers want the full movie theater experience. For them, the focus should be the monitor and the laserdisc player. But we guarantee, if you ask the right questions, the right system will follow. ■

For the phone numbers of manufacturers recommended in this story, please turn to "Home Theater Component Finder" on page 78.

Home Cinema Paradiso

BY PETER BARRY

If we were to go a step nearer home cinema *paradiso*, with little concern for budget, we could upgrade across the board. The result would be a no-compromise home theater system that will bring viewers as close to the film experience as possible. The Sony projector offers multiple aspect ratios and remote-controlled convergence, and the Faroudja line doubler will rid the picture of visible scan lines without adding disturbing artifacts. The Fosgate System 8.0T combines spectacular audio capabilities with quality amplifiers and one of the industry's best processors. Get some discs, and find a restaurant that delivers.

Screen

Sony VPH-1252 front projector

Suggested Price: \$14,910

Da-Lite Tensioned Cosmopolitan

Electrol Screen

Suggested Price: \$1,630

Video Source

Pioneer CLD-97 combi player

Suggested Price: \$2,500

Speakers

Fosgate-Audionics Home Theater System 8.0T, which includes the Fosgate 3A surround processor, three 4200 multichannel amps, three MC220 speakers for left, center and right channels, two SD180 dipole surround sound speakers, and two FS400 18-inch subwoofers. Suggested Price: \$15,999

Electronics

Faroudja Line doubler

Suggested Price: \$15,000

System Cost: \$50,039



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- HR-VP606 VCR++ New!
- HR-VP710

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- VL-L64U* 12x, Remote
- VL-L94U* 12x, CLVF

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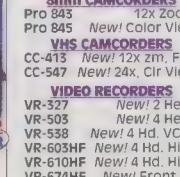
12 System



Laser Viewfinder

- ES70 12x Zoom
- ES-500 12x, CLVF
- ES-750 New! OIS, CLVF
- ES-800 New! OIS, CLVF
- A1 Digital

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- CC-547 New! 24x, Clr View

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- VR-503 New! 4 Head
- VR-538 New! 4 Hd. VCR+
- VR-603HF New! 4 Hd. Hi-Fi
- VR-610HF New! 4 Hd. Hi-Fi
- VR-674HF New! Front AV
- VR-721HF New! Super-VHS

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- IT-A3000 IT-A100
- IT-A2500 IT-A200

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Video In The PALM Of Your HAND

*A buyer's guide to
extra-small, ultra-portable
TVs and monitors.*



Tiny televisions are a paradox. The screens can be frustratingly small, batteries can fade faster than your attention span, and reception can be iffy. Yet, when you need one, there's nothing more comforting or useful than a hand-held, battery-operated small TV. In times of calamity and tabloid-induced curiosity, hand-held TVs are our lifeline to the outside world, whether what we want to know is which roads are still open or whether a war has broken out. "A TV is much more reassuring than radio," suggests Pat Ruggieri, Sony's national marketing manager for personal television and Watchman.

For sports fans, soap opera buffs and news junkies, today's tiny TVs, which all come with earphone jacks, let you quietly keep up with what's happening while you're on the job, lounging in the yard or cruising down a highway (with a recommended external antenna kit). "I couldn't get enough during the World Cup," says Andrew Carrillo,

national account executive of CBM of America, which imports Citizen video products. In fact, lately, Citizen has been doing exceedingly well with its "Trial Size TV" promotion, which is keyed to appeal to the O.J. Simpson fan 'n' foe club. (Yes, O.J. has sold a lot of small TVs.)

Serious videophiles likewise prize mini-monitors, with or without a TV tuner, as a useful tool for following or instantly replaying their taping sessions in the field. When snapped into an accessory shoe or bracketed to a camcorder's tripod mount, a tiny monitor looks mighty big compared to a viewfinder. These days, it also lets shooters assemble a homemade version of an LCD viewfinder camcorder like the Sharp ViewCam, and at a lower cost. Sony's synergistic FDL-K400 and FDL-X600 monitors even take their power from the camcorder's battery.

For all these reasons, small TVs and monitors, with screen sizes less than six inches continue to thrive. We've included details about nearly three dozen of them in the accompanying chart. They range from 1.8 to 5.9 inches in screen size, and from \$120 to nearly \$1,500 in suggested price.

They come in color and black-and-white, with liquid crystal displays (LCDs) and cathode ray tubes (CRTs). Most are truly pocketable models, weighing as little as half a pound with batteries. ("When we say pocket TV, we're talking shirt pocket not rear pants pocket," stresses Carrillo, underscoring the delicate nature of these products.) We've also included a few more rugged, multipurpose TV/VCR/AM/FM/audio cassette-equipped models that weigh upwards of 10 pounds. Running on larger D-cell or nickel-cadmium rechargeables, they offer extended play time and versatility as portable entertainment centers for the van, kitchen or bed table.

To maintain their svelte physiques, most hand-held TVs utilize a color LCD that electronically fires individual picture elements on a screen. LCDs come in two types, passive-matrix and active-matrix. First harnessed in the early 1970s for calculator and watch displays, passive-matrix (also



Pool Pal:
Sony's water-resistant FDL-KB300.

Ready for O.J.: Casio's TV-7800 TV, a color LCD screen and digital tuning.

BUYING GUIDE

• BRAND	• MODEL	• PRICE	• SCREEN TYPE	• TV/MONITOR	• SCREEN SIZE (INCHES)	• PIXELS	• BATTERY LIFE & TYPE	• WEIGHT (OUNCES)	• SPECIAL FEATURES
CASIO	TV-600	\$200	PM	CTV	2.2	39,000	3 hrs (4AA)	6.7	AS
CASIO	EV-200	\$280	AM	CTV	1.8	61,380	2 hrs (3AA)	6.4	
CASIO	EV-500	\$350	AM	CTV	2.5	61,380	2 hrs (3AA)	6.7	AS
CASIO	EV-2500	\$400	AM	CTV	2.5	61,380	10 hrs (3D)	NA	AM/FM, SSC, TGL
CASIO	TV-7800	\$300	AM	CMTV	3	75,816	2 hrs (6AA)	14.5	
CASIO	VM-50		AM	CM	1.8	61,380	4-5 hrs (4AA)	8	AMS, AVC, AVIO, SCP
CITIZEN	ST955	\$120	PM	CTV	2.2	52,320	4 hrs (4AA)	10	AS, CA
CITIZEN	ST905	\$130	PM	CMTV	2.2	70,080	4 hrs (4AA)	9	AS, CA
CITIZEN	M329MKII	\$230	PM	CM	2.9	96,608	4 hrs (4AA)	5	CK
CITIZEN	M938	\$350	PM	CM	3.8	105,120	4 hrs (4AA)	9	CK, CA
MARANTZ	LCD-410	\$799	AM	CMTV	4	89,000	2.5 hrs (6AA)	13	ADAPT, AM/FM, AVIO, BP, NCD, WI, SF, PAL
MEMOREX	16-165	\$200	PM	CMTV	3.3	118,580	3 hrs (6AA)	10.2	
RADIO SHACK	16-170	\$120	PM	CY	1.6	52,320	2 hrs (4AA)	6.5	AS
RADIO SHACK	16-164	\$140	PM	CTV	2.2	39,600	2.5 hrs (4AA)	8.3	AS
RADIO SHACK	16-169	\$200	AM	CMTV	1.8	61,380	2 hrs (3AA)	6.5	AS
RADIO SHACK	16-168	\$200	PM	CTV	2.5	118,800	2.5 hrs (4AA)	8.5	AS
RADIO SHACK	16-167	\$250	AM	CMTV	2.5	71,760	2.5 hrs (3AA)	6.7	AS, PO
SHARP	4M-T30U	\$699	AM	CTV	4	112,320	3 hrs (8AA)	17	AA, AVC, BC, E, TCP,
SHARP	6M-40U	\$1,200	AM	CM	5.6	168,480	NA	25	AVC, SM, ST
SONY	FD-230	\$130	FD	B&W	2.7	DNA	4 hrs (4AA)	14 WB	CA, H, ST
SONY	FD-280	\$150	FD	B&W	2.7	DNA	2 hrs (4AA)	17 WB	AS, BC, CA, CP, E, H
SONY	FD-285	\$170	FD	B&W	2.7	DNA	2 hrs (4AA)	22 WB	AM/FM, AS, BCA, CA, CP, E, H
SONY	FD-525	\$130	CRT	B&W	4.5	DNA	5 hrs (8D)	99 WB	ADAPT, AM/FM, AS, CA, CH
SONY	FD-555	\$170	CRT	B&W	4.5	DNA	3 hrs (8D)	155 WB	ADAPT, AM/FM, CAS, CA, CH, MSS, ST
SONY	FDL-22	\$149	PM	CTV	2.2	70,000	3.5 hrs (4AA)	10.5 WB	AS, CA, NS
SONY	FDL-370	\$380	AM	CMTV	3	89,505	8 hrs (6C)	41 WB	AS, BB, CA, FS, SLT
SONY	FDL-380	\$400	AM	CMTV	3	89,505	8 hrs (6C)	41 WB	AM/FM, AS, BB, CA, FS, SLT
SONY	FDL-3105	\$540	AM	CMTV	3	89,505	2 hrs (6AA)	20 WB	AM/FM, AS, CP, FS, H, SUN
SONY	FDL-3500	\$500	AM	CMTV	3	89,505	5 hrs (6AA)	21 WB	AM/FM, AC, AS, CA, CC, FS, OSD, PC, SLT, TCP
SONY	FDL-K300	\$550	AM	CTV	3	75,816	2.5 hrs (NiCad)	35 WB	AS, FUH, OSD, RB, WR, WLS
SONY	FDL-K400	\$700	AM	CMTV	4	105,600	Camcorder Bat.	16 WB	AD, AVIO, CC, CPS, DMCH, FUH, RC, SUN
SONY	FDT-5BX5	\$350	CRT	CMTV	5	DNA	External Bat.	88	AM/FM
SONY	FDL-X600	\$1,480	AM	CM	5.9	194,000	Camcorder Bat.	46	BNC, CT, DH, FA, PAL, RGB, SV, SWM

KEY TO ABBREVIATIONS

SCREEN TYPE. AM: active matrix; PM: passive matrix; FD: flat display; CRT: cathode ray tube. **TV/MONITOR.** B&W: black-and-white TV; CM: color monitor; CTV: color TV; CMTV: color monitor and TV. **SCREEN SIZE:** measured diagonally. **PIXELS.** DNA: does not apply. **WEIGHT:** without batteries unless WB (with batteries). NA: not available. **SPECIAL FEATURES.** ADAPT: AC/car adapter; AM/FM: radio; CAS: audio cassette recorder; AA: antenna adapter; AC: alarm clock; AD: auto dimmer sensor; AMS: accessory monitor stand; AS: auto scan tuning; AVC: audio/video cable; AVIO: audio/video in and outputs; BB: bass boost; BC: battery case; BCA: pull-out battery cartridge; BNC: composite BNC inputs; BP: detachable battery pack; CA: optional car antenna; CC: carrying case; CH: carrying handle; CK: camcorder connection kit; CP: carrying pouch; CPS: camcorder power supply option; CT: color temperature switchable; DH: detachable hood; DMCH: dual-mode channel selection (presets or auto scan); E: earphone; FA: four audio inputs; FS: flip-up stand; FUH: fold-up handle; H: handstrap; MSS: Matrix Surround Sound; NCD: optional NiCad pack; NS: neck Strapntenna; OSD: onscreen display; PAL: PAL & NTSC playback; PC: preset channels; PO: Picture Off (triples battery time); RB: rechargeable battery, built-in; RC: remote control; RGB: RGB input; SCP: screen protector; SSC: sliding screen cover; SF: screen flip; SLT: sleep timer; SM: sound mute; ST: stand; SUN: sunhood; SV: S-video input; SWM: switchable to monochrome; TCP: 12 channel presets; TGL: tuning guide light; WI: widescreen modes; WR: Water resistant; WLS: water leakage sensor.

HAND-HELD TVs

Bleacher Buddy:
Radio Shack's
16-167 color
TV doubles as
a monitor.

called simple matrix) screens are excited by transistors at the end of each horizontal row and vertical column of pixels.

In active-matrix displays, each picture point is actually a three-layered set of red, green and blue phosphors. Each is individually fired by its own transistor, yielding better color and clarity in scenes with motion, since the pictures are re-

distance from the screen. That's why CRTs are fairly deep. Since 1982, however, Sony has offered ultra-thin black-and-white TVs that use a unique flat display (FD) tube technology that uses an electron gun with a bent neck. This enables it to sit under and almost parallel to the phosphor display screen, resulting in a high-contrast black-and-white picture tube that's just one inch deep.

Sony has sold millions of FD sets, helping in the process to establish the hand-held TV as a mainstream consumer product. Now the company is about to retire the technology. The black-and-white FD230, FD280 and FD285 models will shortly be supplanted by Sony's first passive-matrix color LCD model, the FDL22, costing only a few dollars more. The new baby's other advantage, apart from color, is a unique "Strap-tenna" that lets you dangle the set from your neck. The strap keeps the TV close-by and safe, while you're reaching for a hot-dog at the ballpark, by turning your entire body into an antenna. Better still, this antenna doesn't poke your seat mates, the way conventional rod antennas do when you're jumping around in the heat of a big play.

While older videophiles may feel a nostalgic pang at the passing of Sony's black-and-white line, Ruggieri says that the core audience for hand-held TVs, which is male and under 35 years old, "can't relate to black-and-white pictures at all. Even the old movies they see have been colorized." Sony also offers two of the most intriguing active-matrix LCD models. The FDL-KB300 is the world's first water-resistant color TV. It's sealed on all sides and charged



Sharp & Sharper: Sharp's 4M-T30U TV (top) has a four-inch color LCD, while its 3E-P1 (above), available now only in Japan, has a screen that's easier to watch in sunlight.

freshed much more quickly. Both varieties of LCD panel are luminescent and backlit with tiny fluorescent tubes. (Note that to arrive at a pixel count for their displays, most makers add the individual pixel counts for the red, green and blue panels that are overlaid in a color LCD screen. The discernible dots in a display are actually one-third the number of pixels you'll find listed in our chart.)

In conventional CRTs, the image is scanned across the face plate from an electron gun that must be set back at a

by placing the TV on an electromagnetic induction charging station that zaps power straight through the case to a nickel cadmium battery. The back of the FDL-KB300 can be removed to wire the unit to an AC or DC power source, but in such cases it's no longer suitable for viewing in the bathtub, the sauna or poolside.

Sold by Sony's industrial video division, the diminutive FDL-X600, which has a 5.6-inch screen, is a pro monitor in the truest sense, capable of taking multiple RGB, BNC and S-video inputs. It is also switchable to monochrome display for higher resolution and boasts variable color temperature settings of 5,600 Kelvins, 6,500 K and 9,300 K. And the FDL-X600 is a global traveler, capable of playing back PAL input signals as well

Double Duty:
Marantz's
LCD 410 also
accepts PAL
signals.



as NTSC.

Marantz' sleek new LCD-410 video monitor/TV/radio can also play PAL signals, but it stands out as well for its unique screen flip feature, which reverses the image should you choose to mount the TV upside down on the roof of a van. For letterbox fanatics, it's little four-inch screen can be matted for clean 16:9 and 21:9 displays.

While 1.8-inch and 2.2-inch passive-matrix color TVs by Citizen and Casio achieve street prices as low as \$99, the complexity of active-matrix manufacturing combined with the steep value of the Japanese yen has made active-matrix sets much more expensive. That goes double for active-matrix screens four inches and larger, where the chance of a single pixel failing (and showing as a pinpoint spot) is much higher, and the discard rate of defective panels remains painfully steep.

These are key reasons why Sharp's 5.6-inch 6M-40U color monitor, priced at \$1,200, is almost double the price of its' \$699 four-inch 4M-T30U TV, while a 10.4-inch Sharp LCD screen intended for computer applications commands a staggering \$8,000! (The company recently showed a prototype for million-

pixel flat-panel LCD TVs with screens as large as 21 inches, but such breakthroughs are strictly technological statements, hardly the stuff anyone will be able to afford in the near future.)

In fact, Bruce Pollock, Sharp's national marketing manager for LCD products, says the high costs for active-matrix screens even made the company reluctant to import an ultra-light three-inch LCD color TV, the 3E-P1, with a built in FM/AM radio now on sale in Japan. This is even though that cutie is the first to utilize a low-reflection type of thin-film transistor LCD that makes outdoor viewing possible without a sunshade. (You can find the same 99-percent light-absorbing screen on Sharp's Hi8 VL-H410U ViewCam and on the 8mm VL-E42U ViewCam, for which an optional TV tuner is available.)

One way around the high cost of active-matrix LCDs may be through the use of a better breed of passive-matrix screen dubbed "dual-scan matrix," which is already being used for computer screens, according to Pollock. While the conventional passive LCD screens scan from the top line of the display down to the bottom line, a dual-scan matrix can simultaneously scan in the top line and

in the middle of the display. Then the scan line moves to the second line from the top and the second line below the middle. In this way, it can scan the entire screen twice as often in the same time, reducing flicker while improving color imagery and saturation. "Sharp has also been able to do a lot with reflection, so the passive-matrix screen doesn't need to be back lit and consume so much power," says Pollock.

Regarding power, all manufacturers of small TVs and monitors are reluctant to offer hard-and-fast figures for battery life because it's such a variable. "The more movement and color there is on the screen, the harder the LCD has to work and the more power is consumed," says Citizen's Carrillo. "When I'm exhibiting at a trade show, I tend to put on a [relatively static] home-shopping channel, so I can get four hours out of a set of alkaline batteries. But people come up to me and say they only get two hours of play time with the same TV."

Circuitry improvements could extend battery capacity but, again, there would have to be a big trade-off in the price of the TV, and manufacturers don't think the public would be willing to go for the higher prices. ■



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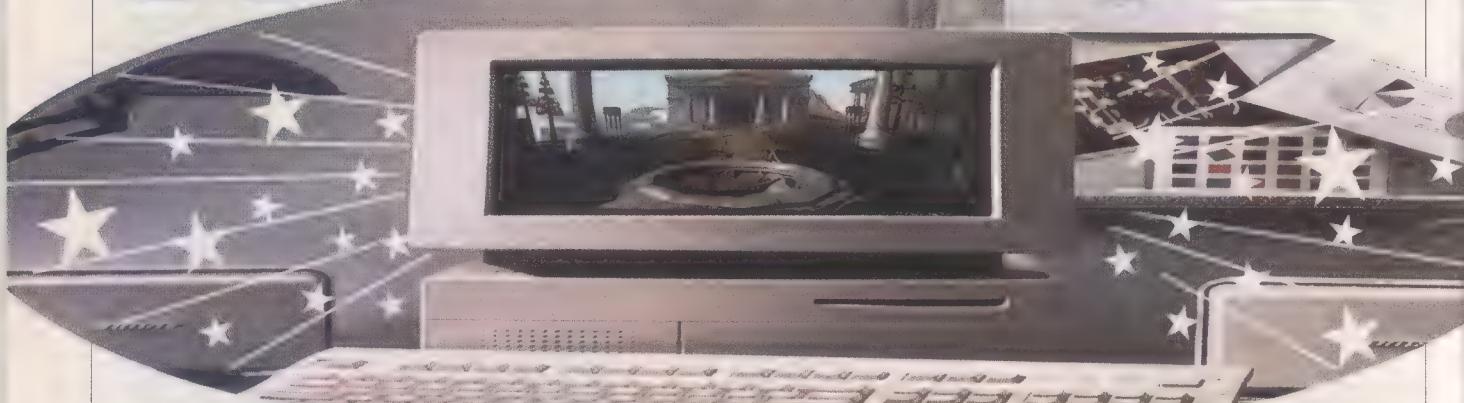
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BY RON GOLDBERG

HOTROD



YOUR PC

How to turn your work-a-day home computer into a dynamite CD-ROM game machine.

For years, we've been hearing about how the personal computer is going to be the engine that drives a new entertainment medium. Now, with CD-ROM drives included in so many new PCs and thousands of CD-ROM titles available, it looks like that future may have arrived. Computer jockeys are enjoying the first wave of the multimedia revolution, and it's increasingly video friendly. Thanks to hundreds of megabytes of space, CD-ROMs can accommodate large chunks of video and audio. A few multi-disc CD-ROMs, like Origin's *Wing Commander III: Heart of the Tiger* promise 3.5 hours of video, more than a feature film. The video is crude by conventional VHS and

laserdisc standards, but it's compelling and growing increasingly sophisticated as developers pour more money and energy into original productions.

Unfortunately, the message is ahead of the medium. CD-ROM entertainment is not as accessible as either consumers or manufacturers would like. Since computers vary wildly in the way they're equipped and configured, it's exceedingly difficult for software publishers to come up with discs that reach the holy grail everyone is pursuing—plug and play performance, just like good old VHS. Creative software designers complicate the picture by constantly stretching the envelope. CD-ROM titles are often authored to take advan-

tage of state-of-the-art computer performance, which sometimes seems to change on a weekly basis, and which is often ahead of the equipment people already own.

Even worse, the minimum hardware requirements listed on CD-ROM packages are often misleading. For example, a title might claim to need a computer with only 4 megabytes of RAM. However, those same 4 MB have to run your system files, drivers, desk accessories, controllers, screen savers, cool beeping sounds and everything else—as well as the CD-ROM. A chubby operating system, whether its Windows or System 7, can easily exceed 3 MB of RAM. In other words, even though you "need"

only 4 MB of RAM, you really have to have more. And minimum system requirements are only the starting point.

To take advantage of all that CD-ROM has to offer, you'll need hardware that's been optimized for multimedia. In two simple words, this means faster and more. Windows PCs are usually receptive to selective component upgrades, but there's a bewildering selection of offerings out there. For the Macintosh platform, which is more of a closed system, the solutions are fewer, but Mac mavens argue that so are the problems. Regardless of which computer you use, you can tweak it for top ROM performance with a few strategic moves.

MAKE IT FAST

Picking the right CD-ROM drive is the easy part. When the technology first reached consumers a few years back, the drives were so slow as to make people wonder whether CD-ROMs would ever be able to compete with dedicated game systems like those by Nintendo and Sega. These days, the standard CD-ROM technology is called a double-speed drive, because it can transfer data to the computer's central processing unit (CPU) twice as quickly as the old single-speed drives.

Good double-speed drives offer a transfer rate of 300 to 330 kilobytes per second, compared to the sluggish 150 KB/second previously attainable. They also offer an "access" time of 350 milliseconds or better. Access, or "seek" time is how long it takes for the drive's read head to find a specific spot on the disk. A lower seek time number is better, or faster, than a higher one. The speediest drives have an access time of less than 200 milliseconds.

Double speed drives carry suggested prices that start below \$200, and street prices between \$150 and \$300, for an external unit. They're what software engineers design the great majority of their titles around. Whichever drive you choose from the numerous models crowding shelves, you can't go too far wrong, as long as you're getting performance similar to the above specifications.

If you're shooting for the moon, the state of the art in CD-ROM hardware lies in triple and quadruple-speed drives. Today's top speedsters include NEC's triple-speed MultiSpin 3X and the quadruple-speed MultiSpin 4X, Teac's SuperQuad 4X and Toshiba's 3501 quadruple-speed drive. Suggested prices start at around \$400 and are roughly double those for double-speed drives, but models can be found for as little as \$300. Compatibility is only a minor issue. Some of these drives use a



Quad City:
NEC's MultiSpin 4XE
quad-speed CD-ROM
drive (top) and
Toshiba's XM-3501
quad drive.



SCSI (small computer serial interface) connection, while others use an AT-type connection, like your sound card.

The faster the ROM drive, the more seamless its input into the computer. For data-intensive tasks like video, which is becoming a big part of CD-ROM software, the improvement in playback the faster drives deliver is substantial. Some day, these mega-speed drives will be considered mainstream gear. But for now,

you can save some money by going for a 2x drive and feel confident that if you're not getting the performance you expect, it's probably not the drive's fault.

PROCESSOR POWER

In gauging the performance of a multimedia system, the speed of the CPU is often crucial. It doesn't take a hacker to

figure out that the faster the processor, the faster the computer. Since nobody wants to keep buying new computers every time there's an advance in speed or power, the more cost-effective route is to upgrade the processor.

For PC and compatible users, there's a neat solution called overdrive chips. Simply put, they double the clock speed of your processor, which is measured in megahertz. A typical mid-line

Fast Action: ATI Graphics Ultra Pro, a graphics accelerator with mouse.



PC, running either a 386 or 486 chip, will have a clock speed of 25 or 33 megahertz. Installing an overdrive chip for between \$250 and \$600 will boost the speed to 50 or 66 MHz, and turn your sedan into a roadster. Overdrive chips aren't available for every type of machine, but if yours can take one and you need a hit of speed, this might be the ticket.

The next level of upgrade is more extreme, and that's to actually install a new daughter board for the processor, or even replace the motherboard itself. In many cases, the cost of doing so is high enough to make you wonder if it might not be more sensible to replace the whole computer. If you're using an old 286 machine, or something even earlier, the answer is probably yes. But if your PC is reasonably up to date, and you like the rest of your setup, and your model can accept a CPU upgrade, it's cheaper to switch a chip than to buy a whole new computer.

continued on page 74

8 Steps For Power Players

1. Select a double-speed or better CD-ROM drive
2. Add an overdrive chip
3. Upgrade the CPU
4. Add a graphics accelerator
5. Update the video and CD-ROM drivers
6. Copy key files to the hard drive
7. Add more RAM
8. Turn off unnecessary applications

Ready to Rumble—CD-ROMS For Power Gamers

Now that your PC's turbo-charged and up to speed, what are you gonna watch, play and enjoy? Try the following discs. Packed with videos, graphics, sound, animation, even plots, they're multimedia's cutting edge.

• *Under a Killing Moon* (DOS, \$99.95, Access Software). One of the new breed of HollyROM: discs with movie studio, big-budget production values using either movie-based or original stories and plenty of full-screen video. *Killing Moon* stars Brian Keith and Margot Kidder in an original adventure set in San Francisco of the future.

• *The Residents Freak Show* (Windows/Mac, \$49.95, Voyager). One of the most wander-where-you-will CD-ROM experiences you'll encounter. The Residents allow you to enter the fairground and explore the backstage lives and psyches of the performers through videos, photo albums, animation and non-stop wooze-inducing music until you find yourself becoming a part of it all.

• *The Daedalus Encounter* (DOS/Mac, \$99.95, Media Vision/Mechadeus). Nope, this is not a multimedia version of Joyce's *Ulysses*, but another post-apocalyptic HollyROM, starring post-Wayne's World megababe Tia Carrere.

• *Myst* (DOS/Mac/Windows, \$50.00, Broderbund). Reigning champ of interactive experience thanks to the astonishing graphics, clever use of minimal-size video, and user-involving interface and operation.

• *Lunicus* (MPC/Mac, \$69.95, CyberFlix). Using the logic of a good action movie, *Lunicus* combines intense high-speed blast-the-alien exploratory streetfighting with necessary downtime during which you can chat, flirt, attend briefings or seek approval from a father-figure commander while recovering your heart rate. Incorporates great 3-D no-waiting animation, humor, and sudden developments.

• *Star Wars: Rebel Assault* (DOS/Mac, \$50, LucasArts). All-time best-selling CD-ROM entertainment title containing 15 levels of fly 'n' blast gameplay from training to the trench run, combining original full-screen footage, clips from the movies, four-channel sound and the LSO playing John Williams' movie score.

• *The Madness of Roland* (MPC/Mac, \$39.99, Hyperbole Studios). The first novel created from the get-go as an interactive multimedia experience. Treats the medium as a distinctive new artform.

• *Dust* (Mac/Windows, \$69.95, CyberFlix). Interactive western set in a lawless town where you must choose between playing poker, chatting up saloon waitresses, searching for treasure, questioning the locals or slinging guns in the ace 3-D graphic, music-driven video environment created by the makers of *Lunicus*.

• *The Residents Gingerbread Man* (Mac, \$49.95, BMG). More Resident alien thinking from a group that has been on the fringe too long. Look for a gingerbread man who surfs on peoples brainwaves—hmmm.

• *Night Club Earth* (PC, Mac/Windows, \$59.95, Inspired Arts). Features the video synthesizer work of video artist Denise Gallant. Includes state-of-the-art quality full-screen video with 16-bit music, and 48 royalty-free videos.

• And don't neglect: *Burn Cycle* (PC/Mac, \$59.98, Philips Media Games), *Gadget* (Windows/Mac, \$79.95, Synergy), *Skullcracker* (Mac/PC, \$69.95 CyberFlix) and *Monty Python's Complete Waste of Time* (Windows, \$59.95, 7th Level).

—Josef Krebs



Warranty Roulette

Are extended service plans vital safety nets or a needless expense?



The salesman cocks his head and, with his best Vincent Price leer, intones: "Of course you'll be purchasing your VCR with that extended warranty, yes?" His eye twitches and his expression hardens into a dare. Suddenly, you feel trapped, set up, confused by a last-minute buying decision you hadn't anticipated. What extended warranty? You came into Murray's Megawatt Metropolis to buy that \$289 VCR on sale and here you are, facing another \$150 to "protect your investment." What happened?

The extended warranty, also known as the extended service plan (ESP) or contract is a type of operating insurance offered for TVs, VCRs, camcorders, even complete home theater systems, typically at the point of sale. By all accounts, sales pitches for extended warranties are becoming more common. Extended warranties add to the up-front cost of products and seem to overlap the warranties that products already include. But the story behind them goes deeper than you might think. In this article, we'll explore why consumers are so distrustful of extended warranties, why video dealers are so eager to add them to their sales and whether they make sense. Surprisingly, it's not all bad news for the consumer, although it often happens that even a good warranty value is lost in the sales hype of a poor presentation.

As a start, let's look at how the consumer electronics industry has changed. One of the biggest changes in recent years is that traditional store-front retailers are facing more pressure than ever from new types of product distributors, as represented by warehouse clubs, TV and catalog shopping, online computer networks and the like. Some of these so-called mass merchandisers regard video products less as specialty items than appliances. The bottom line is that competition for your business is fiercer than ever. And the bigger the retailer, the more furious the war.

Profits, meanwhile, have taken a sharp turn downward. Stores that formerly operated at a 30 percent profit now struggle to achieve 15 percent, and employee attrition is high. It's not a jungle out there, it's a riot.

In the face of such daunting circumstances, it's crucial for retailers to develop new ways to make a profit, while still providing competitive values. Enter the extended warranty. The conventional wisdom among retailers is that an extended warranty represents a

good value to the customer while providing much needed profit. However, there are several bumps in the road that cause consumers to think twice about signing up for them, and to distrust the way they're pitched.

There are about a dozen major providers of extended service plans (see sidebar), and they treat the plans as real products in and of themselves. A warranty service—let's call it Brands America—provides a buying program for each retailer. This includes an advertising budget, administration, training and multilevel cost reductions based on the number of contracts the retailer sells. The contracts are differentiated by model numbers that vary according to the length of time for which the plans are good (in terms of labor and parts) and the specific equipment category to which they apply.

For instance, VCRs have different repair rates and repair costs than audio/video receivers or big-screen TVs. Prices for extended warranties are determined by actuarial tables based on actual repair costs for video compo-

THE PRICE OF ESP

nents. These very proprietary figures describe the average frequency and reasonable cost of repair for types of products, based on paying service centers the "average bench rate" for different types of work. In determining these figures, the longevity of each product category, from camcorders to laserdisc players, is also determined.

Using this information, our fictitious provider, Brands America is able to determine how much it should cost to add a year of additional coverage for a product, and to establish a cost to the retailers it works with for extending the coverage of a VCR, or any other component, for the one, two or three years that extended warranties typically cover.

It is also in the best interest of Brands America to employ the best possible service centers, since it has a monetary interest in guaranteeing a "once-in/once-out" quality repair to the people who buy its warranties. And the leverage Brands America holds over its service centers is mighty. It's called withholding business. This is good news for consumers. After all, who likes returning a just-fixed VCR for the same problem a week later, or waiting weeks for what should be a simple fix.

FROM DAY ONE

But this doesn't make the decision to buy an extended warranty any easier. Part of the confusion, and much of the mistrust, comes from the concept of overlapping coverage. The popular perception is that the consumer is being ripped off by purchasing an extended warranty that applies from "Day 1," the date at which the purchase was made, when the initial period of coverage should be the responsibility of the manufacturer. Nowhere is this more confusing than with products that come with uneven manufacturer warranties for parts and labor; for example, VCRs that are covered for 90 days on labor and one year for parts. A three-year parts and labor extension for such a VCR would actually cover 33 more months for the labor, and two more years for parts.

Since this is mildly confusing, retailers tend to lump the entire coverage under the banner, "From Day 1." It sounds good and it imparts a warm fuzzy quality to a dealer's "Customer Care

We called three major retail chains and asked for their prices for extended service plans for one, three and five years for a VCR costing \$400. Here's what we were told, with all plans good "from Day 1":

	1 Year	3 Years	5 Years
RETAILER 1	\$29	\$89	\$95
RETAILER 2	\$50	\$120	\$160
RETAILER 3	\$39	\$119	\$199 *
AVERAGE	\$39	\$109	\$151

* Promises a 50 percent refund after five years if the ESP is never used.

Package." Unfortunately, it's not accurate and it implies that customers are paying for duplicate coverage for the first 90 days for labor, and for the first year for parts. This makes it easy for a consumer to conclude that the extended warranty should cost a lot less if he only wants it to cover the last 33 months for labor and two more years for parts. But since the salesperson has already backed himself into a corner by mistakenly calling the extended warranty good "from Day 1," you're not likely to get a positive response to any request for a discount.

Some retailers and warranty providers are enlightened enough to avoid this trap. They represent the warranty as it should be—as over and above the manufacturer's warranty. In this case, be careful if you're only offered a one-year extension. You are entitled by law to inspect the written warranty, which the retailer must provide, and it doesn't take a genius to see that one year for parts and labor on top of an average VCR's warranty of 90 days for labor and one year for parts, only buys you an extra nine months for labor. How much is this reasonably worth?

Often the astute customer asks: "What happens if the retailer goes out of business? Who covers my service needs?" The answer is simple. The extended warranty provider. In our example, Brands America owns the paper, regardless of the original retailer's status. This is why

you should be covered even if you move to a different state.

A deeper question is: "What happens if the service provider goes out of business?" The answer is, you should still be covered. The industry is highly regulated on behalf of consumers, and warranty providers must be squeaky clean. Strict government regulations require warranty providers to be underwritten by established insurance companies. For example, it is standard for warranty providers to replace unrepairable lemons with new equipment (although it's important for a consumer to get this guarantee in writing).

TO BUY OR NOT TO BUY

However, the key question consumers want answered is, "are extended warranties worth the extra cost?" Our own answer is that the prices for service contracts are roughly equivalent to the average cost of repairs for VCRs, TVs and the like. To test this perception, we conducted a phone survey of 20 independent repair shops around the country and presented each one with a common VCR problem: the unit won't play. The average cost to repair this problem, estimated from our over-the-phone description, ranged from \$45 to \$160, with the mean cost just below \$100.

We also asked three large retail chains for the prices of their extended service contracts for a \$400 VCR for one, three and five-year periods (see

WARRANTIES

chart). The prices averaged out to \$39 for one year, \$109 for three years and \$151 for five years. Most warranties started from "Day 1" and included a free maintenance check-up; some included a loaner during service periods. But the average price of a three-year contract was only a few dollars more than our average repair estimate. The lesson in this instance: If your VCR needs service within three years, a service contract will probably pay for itself. In the words of Damon Runyan's Big Louie: "Youse can pay me now or



youse can pay me later." So where does the bad press come from? Reported shady dealings are the direct result of clumsy execution by retailers, especially abrasive salespeople who won't take "No, no, no!" for an answer. Or sales clerks who warn you that the wonderful VCR you just bought from them is going to break.

Why don't sales people just describe the benefits of an extended service plan without the scare tactics? The answer is profit margin. A loss leader, which is a product sold at a price low enough to attract customers but not high enough to make the store any money, can be transformed into a profitable sale with the addition of a service contract. As noted earlier, pressures on retailers are great. It is vital for them to earn profits whenever and wherever possible, which is fair enough.

But in attempting to earn profits, sales personnel often create problems by the way they sell extended warranties. A typical electronics dealer might require that four to eight percent of each salesperson's gross monthly sales to be comprised of service contracts. This means that if the customer ahead of you declined to buy a service contract, or if the sales person was recently "coached" in the back room about his low percentage of ESP sales, you may be the lucky recipient of a very enthusiastic sales pitch. It is not uncommon, even if you've declined the service contract several times, for the service plan to be included on your invoice, with or without an equivalent reduction in the item you are purchasing.

The issue is a painful one for retail managers. Although policies vary, the failure of a store manager to have the store sell enough extended warranties can lead to losing the contract with the provider. The ironic twist is that the pressure to sell service contracts creates a self-fulfilling prophecy that often chases customers farther away.

If sales people were encouraged to pitch in a more enthusiastic light, in-

stead of using the hell-and-damnation school of sales technique, retailers would be more successful. If sales people could show consumers why service contracts serve their interests, they would probably be more open to buying them. There are success stories of self-service warehouse clubs that offer

SWINGING AT THE PITCH

High-pressure pitches for extended warranties come in many forms. If you encounter one or more of the following, it may be time to read the small print.

- "These components are fragile. It's just a matter of time before they break."

- "Listen, I wouldn't be caught dead without an ESP. I have one for everything I own."

- "High-performance equipment is more sensitive, like a race car."

- "Okay, okay, just don't come crying to me, saying I didn't warn you."

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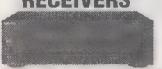
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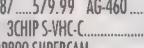
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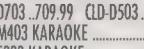
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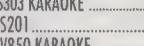
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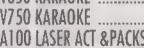
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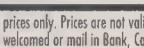
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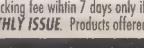
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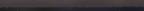
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NEW RELEASES



Ambushed: *Clear and Present Danger's* Harrison Ford (left), as CIA chief Jack Ryan, checks a pulse; ex-CIA agent Willem Dafoe (right) readies a rescue.

FEATURE FILMS

Clear and Present Danger

1994. Harrison Ford, Willem Dafoe; dir. Phillip Noyce. Surround, cc. (PG-13) 141 min. priced for rental. LD letterboxed or full-frame \$44.98. Paramount.

Jack Ryan, the all-American hero of author Tom Clancy's techno-thrillers, is back—and it's getting hard to tell the good guys from the bad guys. The President (Donald Moffat), who looks the part but is really a dangerous jerk, has ordered an illegal covert mission against a Colombian drug cartel. Cortez (Joachim de Almeida), a Machiavellian aide to a drug lord, sees his chance to capitalize and seize power. Caught in the middle is Ryan, the new CIA intelligence director, who's soon being

sniped at by both sides.

Clear and Present Danger is unusually ambitious, even for a \$50-million-plus action epic, and Harrison Ford, who returns as Ryan, gives it the center of moral gravity that makes it play. The movie has its share of spectacular set pieces, but there's just as much suspense in the continual resort to high-tech electronics as in the use of high-tech weapons. (The dueling-computers scene with Henry Czerny, as Ryan's cold-blooded colleague, is an instant classic.) The greatest tension of all lies in Ryan's confrontations with men who always have ulterior motives, which suits an adventure movie with no easy answers.

The pan-and-scan videotape seems to play out more slowly than the movie did when it played in theaters; however, *Clear and Present Danger* has been scrupulously transferred.

—Sol Louis Siegel

It Could Happen To You

1994. Nicolas Cage, Bridget Fonda, Rosie Perez; dir. Andrew Bergman. Surround, cc. (PG-13) 101 min. priced for rental. LD letterboxed \$34.98. Columbia TriStar.

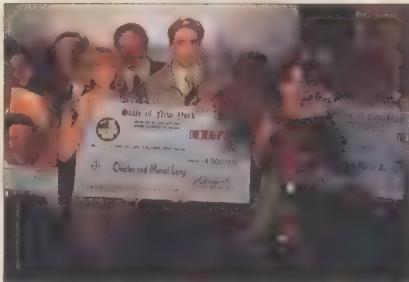
You can't fake charm. In an action film, you can blow something up for excitement. In a horror film, you can add more gore to get screams. But heart without sentimentality, romance without mush, is a tricky tightrope to walk. *It Could Happen To You* dances over the precipice with remarkable grace.

The film's original—and better—title says it all: *Cop Tips Waitress \$2 Million*. Cage is the cop in question, an impossibly earnest, incorruptible New York flatfoot who can't understand why his greedy wife (Perez) is unhappy with the simple life in Queens. Strapped for cash, he offers a recently bankrupted waitress (Fonda) half his lottery ticket as her tip. Any doubt about the outcome?

EDITOR'S CHOICE



ken korman



Check Mates: Fonda, Cage, Perez and a check.

It's a fairy tale, sure, but a joyful one to believe. Thanks to Andrew Bergman's deft direction, and the romantic couple's likability, the film makes simple decency seem heroic. Meanwhile, Perez gives the "wicked witch" role her usual feisty snap, providing a hissably good contrast.

Bergman makes NYC itself the most important supporting player, a city of media frenzies, shyster lawyers and, in a *Miracle on 34th St.* (older, better version) finale, thousands of charitable souls who make for a happy ending. It's a winner.

—Marianne Meyer

Natural Born Killers

1994. Woody Harrelson, Juliette Lewis, Robert Downey Jr.; dir. Oliver Stone. Digital surround, cc. (R) 119 min. priced for rental. LD letterboxed \$34.98. Warner.

The most unrestrained exercise in visual style to appear in mainstream movie theaters since Ken Russell's *Tommy*, Oliver Stone's *Natural Born*

Killers is the story of mass-murdering misfits Mickey and Mallory (Harrelson and Lewis, perfectly cast) and the media circus that springs up around them.

Sensitive to charges of glorifying violence, Stone went to great lengths to characterize his film as a satire about the media's fascination with extreme criminal behavior, and how this leads Americans to become irrationally fearful. Unfortunately, Stone doesn't cast his satirical line nearly far enough. His attention is limited to the easy and obvious target of tabloid TV shows. Stone's point would have been better made with a story that took in the mainstream media—network newscasts, national news magazines and media conglomerates. Instead, he romanticizes Mickey and Mallory with the same inane pseudomysticism he used in *The Doors*.

Still, *Natural Born Killers* is worth seeing for its bravura visual style, which is best appreciated on video; in the theater, it gave this viewer a nasty headache. Stone keeps viewers disoriented with rapid editing, arbitrary shifts from color to monochrome to black-and-white, bursts of animation, clips from television programs and movies and a Trent Reznor-produced score in which jarring change is the only constant. Mostly, it's visual clutter for its own sake. (Could there possibly be any "meaning" intended by his use of clips of giant rabbits from the schlock classic *Night of the Lepus*?) But, hey, it sure looks cool.

—M. Faust



Rough Riders: Harrelson and Lewis as Mickey and Mallory, Stone killers on a roll.

For the latest in a long line of reasons to run out and purchase a laserdisc player, look no further than the new disc-only widescreen release of *Once Upon a Time in the West* (Paramount, \$49.95). Director Sergio Leone's classic Western comes saddled with a troubled past. Fearing the 165-minute film was too long for American audiences, Paramount cut it substantially before the movie's 1969 release, rendering a great movie

nearly unwatchable (even as the full version was breaking box-office records throughout Europe).

To its credit, Paramount resissued the uncut version to theaters in 1984, and to tape and disc thereafter. But the new edition constitutes the film's long-awaited first video release with its widescreen splendor intact.

The beautiful Utah and Arizona location photography makes that wide image indispensable. But it's not just pretty pictures. The vast open spaces and leisurely pace support Leone's brooding meditation on the mythic Western hero, even though the film has no traditional hero. Instead, it features the shocking spectacle of Henry Fonda as a cold-blooded killer.

Jason Robards, Claudia Cardinale and Charles Bronson round out the cast as they tangle over a tract of land soon to benefit from a railroad. Ennio Morricone's score, with themes for each of the four leads, is another unforgettable component of the film.

Fans of Clint Eastwood's *Unforgiven* may recognize an obvious source of inspiration in *Once Upon a Time in the West*. Ironically, it's the only Leone Western that doesn't feature Eastwood (see the pair's *Dollars* belated trilogy). "Dedicated to Sergio" closes *Unforgiven*'s credits, and those words now seem a recognition of debt as well as a heartfelt tribute. ■



Once Upon A Time



Practice Session: *Little Giants*' little giants, Pop Warner football charmingly played.

Little Giants

1994. Ed O'Neill, Rick Moranis, John Madden. dir. Duwayne Dunham. Surround, cc. (PG) 106 min. \$24.96. LD \$24.96. Warner.

If you've seen any of the *Bad News Bears* movies, or either of the *Mighty Ducks* films, you have, in essence, seen this film already. Sports formula family flicks have a rigid gameplan: A scrappy underdog team takes on a gang of well-heeled, cocky stars, beats their butts and learns something about life. Oh yeah, and their coach, a grizzled and/or put-upon loser, finds some kind of redemption.

Little Giants doesn't break the mold, but at least it finds ways to charmingly recycle the set pieces—the weakling, the overweight kid, the brainy nerd, the token girl player, etc.—and add a few unexpected pleasures to an otherwise predictable mix. Credit the performers, especially Ed O'Neill and Rick Moranis, who go mano-a-mano as rival coaches and testy brothers vying for the chance to lead a Pop Warner team in a small Ohio town.

Yes, you've seen it all before but, thanks to this appealing instant replay, you won't mind seeing it again. —MM

Sleep With Me

1994. Meg Tilly, Eric Stoltz, Craig Shaffer; dir. Rory Kelly. Surround, cc. (R) 117 min. priced for rental. LD \$34.98. MGM/UA.

Movies rarely capture the character of contemporary youth. Given the woeful cliches once passed off as representative of beatniks, hippies and punks (terms with more currency in the media than in real life), it's hardly surprising that the media-beloved "Generation X" fares no better.

Even though *Sleep with Me* consists of six discrete scenes written by six scripters, it's remarkably consistent as a compendium of Gen-X cliches: wispy facial hair, non-stop chattering, chain smoking, heavy irony. The plot, in which friends Eric Stoltz and Craig Shaffer are both in love with Stoltz's wife (Tilly), exists only as a framework for talking and posturing. And, in true movie tradition, most of the actors portraying these twenty-somethings are well past thirty.

Call it Generation-Xploitation, but at least when B-movie king Roger Corman was regurgitating canards about disaffected young adults in the '50s and '60s, he did so with tongue in cheek.

—MF

LASERDISCS

My Fair Lady

1964. Rex Harrison, Audrey Hepburn, Stanley Holloway, Wilfrid Hyde-White; dir. George Cukor. Stereo, letterboxed, cc. (G) 173 min. Sides 4 & 6 CAV. \$129.98. FoxVideo.

Would it be unladylike for me to suggest you "move your bloomin' arse" to buy the 30th-anniversary edition of *My Fair Lady*? Gussied up by the team that restored *Spartacus*, the Lady laserdisc is breathtaking. With mind-boggling Cecil Beaton costumes and Gene Allen's (largely uncredited) production design, this tale of a flower girl turning into a lady is a vision to behold.

As for the rest, what's to say? Granted, it's a bit cold, but Rex Harrison, as Pygmalion to Audrey Hepburn's luminous Galatea, gives a performance to savor, though his Professor Higgins is assured a spot in the He-Man Woman-Haters' Club. Same raves for Stanley Holloway, as an uncommonly insightful dustman. Then there's Lerner and Loewe's finest score (sorry, *Gigi*), from the delicious irony of "Ascot Gavotte" to the sighfest that is "On the Street Where You Live."

What makes this a must-own kit, however, is its caboodle: a soundtrack CD, a strip of film (in nifty 70mm), fab prints of Beaton's sketches, plus his hardcover "diary," which includes such bitchy musings as this one about the opera crowd: "Each person was strong enough in his or her own brand of anonymity to kill any costume dead."

Packed onto the discs are sketches, stills, Oscar footage, audio of George Cukor directing (or is that browbeating?), background materials (like a log of "hair goods"—105 pairs of mutton chops, etc.), an hour-long documentary and, most exciting, Hepburn's own vocals to "Show Me" and "Wouldn't It Be Loverly," which are also on the analog tracks during the film proper.

It's enough to make even a heartless guttersnipe deliriously happy.

—April P. Bernard

Rembrandt

1936. B&W. Charles Laughton, Elsa Lanchester, Gertrude Lawrence; dir./prod. Alexander Korda. Digital mono. (NR) 85 min. 2 sides CLV. \$34.95. HBO.

I have waited years for *Rembrandt* to appear on laserdisc. It is not only the finest film dramatization of a painter's life (leaving Vincente Minnelli's histrionic *Van Gogh* portrait *Lust For Life*, starring Kirk Douglas, in the dust), but also director Alexander Korda's best movie.

In addition, *Rembrandt* contains the

most affecting performance of Charles Laughton's career. From the opening—which weaves together the 1842 death of Rembrandt's wife Saskia and the violent contemporary reaction to his painting *The Night Watch*—Laughton is mesmerizing as he melts into the role of a troubled artist who simply won't do the kind of paintings that people want.

Korda, assisted by his art director brother, puts in his characteristic touches, some of which, like the vastness of the galleries, can't adequately be captured outside of a movie theater. But the effect of light and shadows throughout the film play like a visual symphony, and all are eloquently captured on this laserdisc.

Despite the fact that this movie is nearly 60 years old, it's been well preserved. There's some variation in density and contrast. But this is as good as it is likely ever to look, and the sound is surprisingly vivid. However, the disc is unchaperoned, a foolish fault given the movie's episodic structure.

—Bruce Eder

The Fred Astaire/Ginger Rogers Collection

1934-38. B&W. Top Hat, Shall We Dance, The Gay Divorcee, Follow the Fleet. Edward Everett Horton, Eric Blore; dir. Mark Sandrich. Mono. (NR) 415 min. CLV 8 sides \$124.99. Turner/Image Entertainment.

Why buy this set and watch Fred

and Ginger go through the same mating rituals in film after film? One reason: As the Cole Porter song says, they're the tops. And if that's not enough, you'll also find the wonderful work of George and Ira Gershwin, who made the music and lyrics for *Shall We Dance*; Irving Berlin, who wrote the score for *Top Hat*, art deco art directors Van Nest Polglase and Carroll Clark, choreographer Hermes Pan, musical director Max Steiner and Porter himself, who contributed "Night and Day" to *The Gay Divorcee*. Even *Follow the Fleet*, which is the least of the films compiled here, has an Irving Berlin score that includes the classic "Let's Face the Music and Dance." If you're looking for words to live by, you could do much worse.

The set contains three of Astaire and Rogers' best films including *Top Hat*—the undisputed high point of their career together. Nearly every Berlin, Gershwin and Porter song in these films became a classic, but it was Astaire who created the definitive renditions.

As individuals, Astaire and Rogers went on to appear in better films—Astaire in *Bandwagon* and *Funny Face*, Rogers in *The Major and the Minor*—but never were they so beautiful or their dancing so effortless as in the films in this laser-only Collection.

—Josef Krebs



Top Dogs:
Fred and Ginger
at sea in *Shall
We Dance*.



Let's Do Lunch: George Romero's dead heads, back on disc.

Night of the Living Dead

1968. B&W. Duane Jones, Judith O'Dea, Karl Hardman; dir. George A. Romero. Digital mono. (NR) 96 min. plus supplement, 2 sides CLV/2 sides CAV. \$89.95. Elite.

This independent horror film, cheaply yet passionately made, startled moviegoers of the late '60s with its explicit depiction of corpses and cannibalism. No less startling was its genesis: A band of committed commercial filmmakers in Pittsburgh who decided to "put on a show" about flesh-eating zombies in their backyard, so to speak. It became a cult film of the first order and made a hero of director Romero.

For this definitive 25th anniversary edition from a new laserdisc company, Elite Entertainment, key members of cast and crew have been reunited to provide two commentary tracks, one on each analog channel, running with the CLV feature. A second disc in CAV provides the full script, bios, hundreds of stills, scrapbooks, trailers and more. If it's not the most extensive supplement in discdom, as claimed by Elite, it's darned close. It's also the first transfer of a black-and-white mono movie to be overseen by THX, and the result is astonishing. The movie looks and feels like a new release.

The travails of the production have been detailed in many articles over the years, so the extras here, while enjoyable, don't add much new knowledge. The commentary consists mostly of the kind of casual chatter ("There's that old radio...wasn't that your mother's car?") that only diehard fans will enjoy. But this is the sort of movie that inspires fanaticism. Now it's easier to understand why.

—Andy Wickstrom

The Ed Wood Collection

1954-1960. *Plan 9 From Outer Space*, *Night of the Ghouls*, *Jail Bait*. Bela Lugosi, Steve Reeves, Vampira; dir. Ed Wood. Digital mono. (NR) 218 min. \$79.95. Lumivision.

The irony is so blunt that it might have come from Ed Wood's own typewriter: 15 years after he died in poverty and ignominy, "The World's Worst Director" is finally receiving the mainstream attention he so wanted in his lifetime. Now long-time fans who have suffered with grainy dupes can start to upgrade with this two-disc set of three Wood films.

Even newcomers to the world of Wood will want to own this beautiful transfer of *Plan 9 From Outer Space*, the most discussed bad movie of all time. There are movies much worse—that is, duller—but this cornucopia of cardboard sets, preposterous plotting, arch dialog, atrocious acting and missing-in-action special effects is endlessly watchable in a way that few "good" movies are.

Jail Bait (1954) is a gem of sleazoid noir with a neat twist ending. Wood regular Timothy Farrell stars as a crook who blackmails his sidekick's father, a famous plastic surgeon, into changing his face so that he can escape the police. On the other hand, *Night of the Ghouls* (1960), which went unreleased until 1982 because Wood couldn't pay the lab bills, is his dullest work.

The accompanying notes serve as an introduction for Wood newcomers, although buffs will be irritated by numerous mistakes. And replacing *Jail Bait's* minstrel show scene with one that Wood supposedly preferred (though no source is given for this claim) was a mistake. On the plus side, plentiful chapter stops make it easy to replay fave scenes for friends. —MF

INTERACTIVE

Road Rash

1994. 3DO disc, Dolby Surround. \$59.95. Electronic Arts.

Racing titles have long served as a showcase for electronic gaming systems, but the familiarity of the genre only makes this thrilling 3DO version of *Road Rash* seem that much more impressive.

With its ever-changing graphics and sensitive controls, *Road Rash* is surely the most realistic racing simulation ever devised for home use. Head straight for any of five complete courses with themes like "Pacific Highway" and "Sierra Nevada" (game developers love to show their loyalty to Northern California and Silicon Valley), or take your time purchasing a custom bike. Action-packed video segments and raucous tunes from leading alternative metal bands like Soundgarden provide



Digital Highway: Realistic racing in *Road Rash*.

the perfect ambience for all the two-wheeled mayhem. The package also comes with a music-only CD sampler of all the bands featured in the game.

Once you've tried a racing game that makes full use of 3DO's processing power, it's hard to go back to similar titles produced for lesser systems. The disc's surround audio tracks, which let you hear other racers gaining on you before you can see them, is alone worth the price of admission. It appears the days of watching fuzzy little 16-bit characters bounce across a blurry screen are finally gone. Amen. —KK

Beavis and Butt-Head

1994. Sega Genesis cartridge, \$64.99. Viacom New Media.

From the moment you pop in this cartridge, it's clear that the spirit of MTV's smash cartoon has survived the transition to Sega Genesis. An intro sequence consists solely of the classic, at least for eight-year-olds, pull-my-finger-and-see-what-happens joke. Suffice it to say that when Beavis pulls Butt-Head's finger, he emits an exceptionally rude noise.

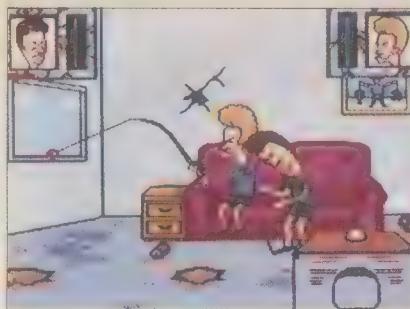
One or two players control B&B as they search for the lost pieces of their tickets to a Gwar concert, which were mangled in an unfortunate lawnmower accident. The two must battle local cops and bullies and solve difficult puzzles to recover the lost tickets, while using whatever weapons happen to be available, including Beavis' powerfully bad breath. Just don't let their attention-spans dwindle to zero, or you'll lose the game.

Parents won't be thrilled by the *Beavis and Butt-Head* game. But kids will, and with good reason. This title would have sold big even if it contained only the most tenuous connection to



America's favorite juvenile delinquents. But Viacom New Media has come through with graphics and gameplay that live up to the TV show's high production values. Sure, this game is mired in exceedingly poor taste. Just don't be surprised if you spend months trying to master it. (SuperNintendo owners should be aware that the SNES version of *Beavis and Butt-Head* is an entirely different game.)

—KK



Boy Toys: Beavis and Butt-Head, hard at work.

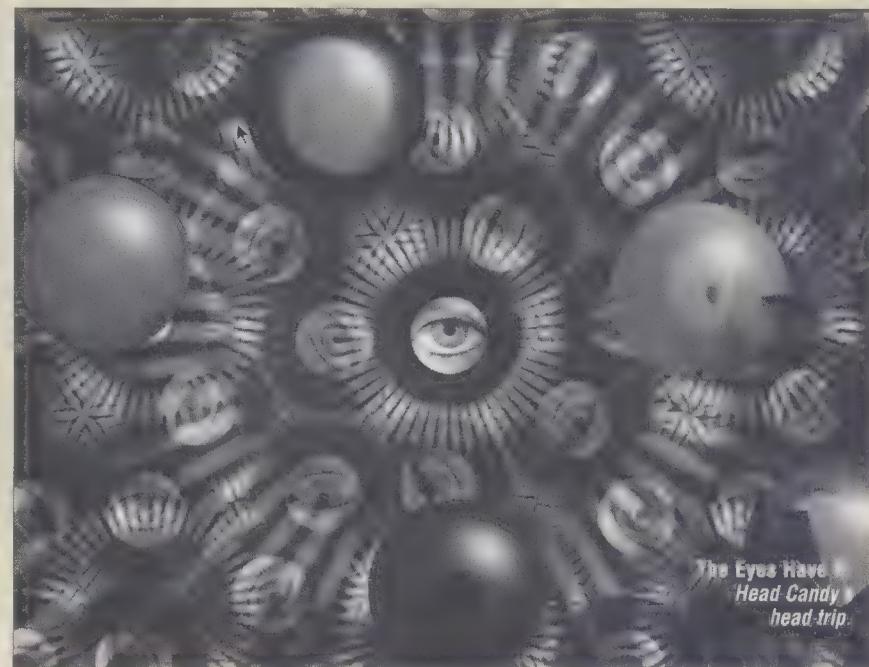
Head Candy

1994. CD-ROM for Macintosh, \$39.95. *Ion*.

CD-ROM would seem a pretty natural medium for Brian Eno. From his synthesizer torture with Roxy Music through his ambient sonic installations, Eno's always been interested in new ways to make and use music. Here, he's taken a fairly dusty idea—the '60s "head trip"—and given it a '90s spin.

There isn't any real interactivity here. Just sit back and watch the animated visuals, which are linked to five new songs, including two with King Crimson mastermind Robert Fripp. The graphics range from ho-hum to luminous, but they're always helped by a pair of diffraction glasses that come with the package. The glasses produce holographic echoes of the visuals, a cool effect from the right distance.

Because it uses full-screen Quicktime and continuous audio, the disc requires at least a Quadra-level Macintosh and 8 megabytes of RAM. There were some glitches while playing on a Quadra 900 with lots of RAM, but it did better on a PowerPC machine. This is definitely not a disc for non-muscular hardware.



Unlike the earlier *Kaleidosonics* CD-ROM, which lets players manipulate its graphics in real time, *Head Candy* is supposed to be a passive experience. Essentially, it's a computer-generated music video. If you like the artist and your Mac can handle it, you'll like this disc. —Ron Goldberg

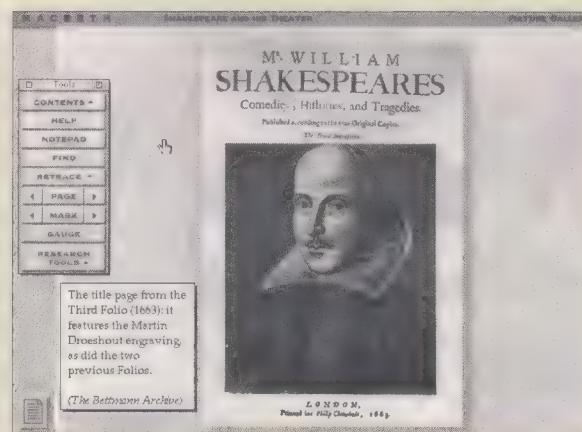
freshen up the act. This multimedia version of the Shakespeare tragedy takes a few ambitious steps in that direction, offering a guided reading, good supplements and some interesting interactivities.

Although the packaging says that the text of the play is accompanied by a video performance by the Royal Shakespeare company, the performance is offered in audio only. This was probably a wise decision on Voyager's part, because even without video, the disc has trouble juggling the audio and text portions in sync. The videos that are on the disc are worth including. There are scenes from movie versions of *Macbeth* by Orson Welles, Roman Polanski and Akira Kurosawa.

The most innovative feature is the "karaoke" function, which lets players act along as either Macbeth or Lady Macbeth.

While it's really nothing more than a blanking feature that lets you select which audio to hear, it's a nice way to put the player inside the play. And that's what this disc does best.

It's not a technical tour de force, nor is it as fulfilling as seeing *Macbeth* performed live, but this CD-ROM is definitely more fun than reading the play or studying the *Cliff Notes*. —RG



Spinning In His Grave: *Macbeth* goes karaoke.

Macbeth

1994. CD-ROM for Macintosh, \$49.95. *Voyager*.

Drama has undergone so many permutations of style and presentation in its two thousand or so years of existence that it's hard to imagine ways to

CLASSICS

And Now for Something Completely Different

1972. John Cleese, Michael Palin; dir. Ian McNaughton. Mono. (PG) 89 min. CLV 2 sides \$34.98. Columbia TriStar.

It's hard to realize 20 years later, but once upon a time *Monty Python's Flying Circus* really was something completely different. Graham Chapman, John Cleese, Terry Gilliam, Eric Idle, Terry Jones and Michael Palin launched a comedy revolution on this side of the ocean, paving the way for the likes of *Saturday Night Live*, *SCTV* and *The Kids in the Hall* as they stretched the boundaries of humor, both in format and taste.

Although overexposure has made it impossible to view *Python* with fresh eyes, this surprisingly good-looking disc provides a delicious reminder of their glory days. Restaging many of the troupe's best TV bits in a feature film, *Completely Different* preserves such immortal *Python* staples as the dead parrot skit, the lumberjack song, hell's grannies and the upper-class twit of the year competition. (No minister of silly walks, alas.) Not everything works: Gilliam's animated interludes seem particularly labored, although prettier than ever. Still, the relentless silliness is hard to resist, and the enlightened bad attitudes—promoting raucous disrespect for authority, traditional sex roles and other sacred cows—retain their zing. Well done, lads.

—JY

The Art of Buster Keaton

1920-24. B&W. *The Saphead*, *The High Sign*, *One Week*, *Three Ages*, *The Goat*, *My Wife's Relations*, *Sherlock Jr.*, *Our Hospitality*. Buster Keaton, Joe Roberts; dir. Keaton & others. Hi-Fi Stereo. (NR) 344 minutes. 3 cassettes \$79.95. (or \$29.95 each) LD \$99.99. Kino/Image.

In last July's *Video Magazine*, I suggested that a boxed collection of Buster Keaton's mid-20s silent masterpieces would be a nice antidote to the overall dreariness of *The MGM Talkies* laser box set. Little did I know my request would be granted a short six months later!

For Keaton's birthday centenary, all of his starring films made before his

tenure and fall at MGM are being released. Most of these films have hardly seen the light of day for more than 30 years, and only then in sporadic film festivals—and, more times than not, in oddly bastardized versions.

If this first of the three sets is an indication (the others will be out in April and June), the picture quality of this series will be exceptional. So much so that it's almost nit picking

to mention the occasional optical glitch, like botched title cards, that could easily have been corrected during transfer. Lovingly performed chamber music underscores most of the films, but the highlight is the Club Foot Orchestra's ultra-cool score for *Sherlock Jr.*

Of the features, *Sherlock Jr.* is the long-awaited standout. With its mind-boggling inventiveness and pioneering special effects, it's no wonder that everyone from Woody Allen to Arnold Schwarzenegger has paid homage. The much underrated *Three Ages* remains a hilarious take-off of Griffith's *Intolerance*, while *The Saphead* (with its original tints) provides a fascinating glimpse of Keaton, the actor. Rounding out the set is a clearer transfer of *Our Hospitality*, Keaton's comically lyrical tale of the rekindling of a southern family feud. The classic *One Week* and the accompanying shorts further attest to Keaton's untiring genius. This is truly a mouth-watering entrée to the treasure-trove of delights to follow in set two.

—Bruce Lawton

**Where the Wild Things Are/Higglety Pigglety Pop!**

1985. Karen Beardsley, Cynthia Buchan; comp. Oliver Knussen; libretto Maurice



Bustered: Keaton ties the knot in *One Week*, in *The Art of Buster Keaton*.

Sendak. Stereo. (NR) 99 min. CLV 2 sides \$49.95. Teldec.

With sly art and surreal stories that fire the imagination of kids and adults alike, Maurice Sendak's wonderful picture books seem ripe for adaptation. However, the stage versions of *Where the Wild Things Are* and *Higglety Pigglety Pop!* fall flat, limiting rather than exploring the possibilities suggested by the original works. Created by composer Oliver Knussen and Sendak himself, who provides the set designs and English-language libretti, these fantasy operas are unlikely to appeal to anyone but art snobs.

Marked by chilly non-melodies, Knussen's music requires the performers to sing in a shrilly mannered style that parodies traditional operatic excesses, rendering Sendak's words virtually indecipherable. Karen Beardsley comes off excessively belligerent as Max, the impish *Wild Things* hero, while Cynthia Buchan is trapped in an uninteresting terrier suit as Jennie, the plucky protagonist of *Higglety Pigglety Pop!*, suggesting a slightly more animated version of Mr. Rogers' low-tech puppetry. Despite Sendak's distinctive visual strokes, the simple sets reinforce the static, uninviting vibe of the music.

Books this rich and evocative might require state-of-the-art film techniques to do them justice—or perhaps they're better left alone, since nothing can top the thrill of Sendak on the printed page.

—JY

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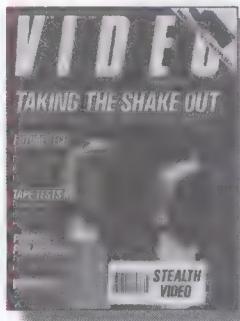
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CLASSICS

And Now for Some Completely Different

1972. John Cleese, Michael McNaughton. Mono. (P 2 sides \$34.98. Columbia)

It's hard to realize that once upon a time *Monty Python's* *Circus* really was something different. Graham Chapman, Cleese, Terry Gilliam, Jones and Michael Palin's comedy revolution on the ocean, paving the way for *Saturday Night Live*, *SC in the Hall* as they stretches of humor, both in

Although overexposed, impossible to view Python's eyes, this surprisingly good tape provides a delicious reminder of the glory days. Restaging the troupe's best TV bits in *Completely Different*, the immortal Python staple parrot skit, the lumbering grannies and the upper-year competition. (No walks, alas.) Not even Gilliam's animated integers are particularly labored, although than ever. Still, the tape is hard to resist, and its bad attitudes—promotion of respect for authority, tradition and other sacred cows—zing. Well done, lads.

The Art of Buster Keaton

1920-24. B&W. The Sign, One Week, Three Ages, My Wife's Relations, Seven Chances, Hospitality. Buster Keaton dir. Keaton & others. H 344 minutes. 3 cassettes \$29.95 each) LD \$99.95

In last July's *Video* I suggested that a boxed collection of Keaton's mid-20s silent films would be a nice antidote to the dreariness of *The MGM Story*. Little did I know that I would be granted a short six months.

For Keaton's birthplace of his starring films

tenure and fall at MGM are being released. Most of these films have



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HIGHLIGHTS

A La Mode

1994. Jean Yanne, Ken Higelin; dir. Remy Duhemin. Fashion movies seem to be in fashion. This one is a rags-to-riches, set-in-the-sixties yarn about an old Jewish tailor's assistant who, letting love lead his designs, inevitably becomes the rage. Stereo. (R) 87 min. VHS priced for rental. LD letterboxed \$39.99. Miramax.

Color of Night

1994. Bruce Willis, Jane March, Ruben Blades; dir. Richard Rush. If you can accept Richard Gere as a psychiatrist who falls for a beautiful, enigmatic woman and solves a murder, why not Bruce? Extra sweaty director's cut. Stereo. (NR) 140 min. LD letterboxed \$39.99. Hollywood Pictures.

The Diary of Anne Frank

1959. B&W. Millie Perkins, Shelley Winters; dir. George Stevens. Classic film based on the real diary of a 13-year-old who gave the world a chronicle of the lives of two Jewish families hiding from the Nazis in Holland. Mono. (NR) 170 min. VHS priced for rental. LD letterboxed \$49.98. FoxVideo.

A Good Man in Africa

1993. Sean Connery, Louis Gossett Jr.; dir. Bruce Beresford. Diplomat in West Africa must make amends for sexual peccadillo by corrupting an incorruptible official. Surround. (R) 95 min. VHS priced for rental. LD letterboxed \$34.98. MCA/Universal.

In the Army Now

1994. Pauly Shore, Lori Petty, Andy Dick; dir. Daniel Petrie, Jr. Uncle Sam needs new recruits but is faced with Slackers generation; enter disarming, pacifist X-man Shore who, in signing up for free food and board, tests the military's will as the commies never



Working Mom: Melanie Griffith as a heart-of-gold hooker with a very young clientele.

have. Surround. (PG) 91 min. VHS priced for rental. LD \$39.99. Hollywood Pictures.

Lancelot of the Lake

1975. Luc Simon, Laura Duke Condominas, Humbert Balsan; dir. Robert Bresson. The Knights of the Round Table follow their impossible quest for the Holy Grail while Lancelot pursues his own impossible dream to balance love for a woman with his love of self and all he holds dear. Bresson, not trusting his "actors" to keep their faces totally impassive, shoots them in closed-visored armor and frequently from the waist down. Mono, subtitled. (NR) 80 min. VHS only, \$79.95. New Yorker.

Medium Cool

1969. Robert Forster, Verna Bloom; dir. Haskell Wexler. Overly detached TV news cameraman searches for involvement, while the real 1968 Chicago Democratic National Convention plays out in background, finally coming to the fore as one hell of a finale, with Zappa's mocking lyrics over the whole happening. Mono. (R) 111 min. VHS priced for rental. Paramount.

Milk Money

1994. Melanie Griffith, Ed Harris; dir. Richard Benjamin. Twelve-year-old hires hooker and decides to make her mom. Ken Russell's *Whore* meets *The Brady Bunch*. Stereo. (PG-13) 110 min. VHS priced for rental. Paramount.

Persona

1967. B&W. Bibi Andersson, Liv Ullmann, Gunnar Bjornstrand; dir. Ingmar Bergman. New, much-needed digital video transfer of Bergman's most modernist and most quoted film, often referred to when using the term Bergmanesque, though the style is atypical. A meditation on identity, art, artists, voyeurism and cute blonde women. Mono, subtitled. (NR) 81 min. LD \$34.98. MGM/UA.

Opera Imaginaire

1994. Carlo Bergonzi, Franco Corelli, Nicolai Gedda, Lucia Popp and Nicolai Ghiaurov; various dirs. Computer animated opera—12 popular arias, from *Carmen*, *Rigoletto*, *Madame Butterfly*, *Marriage of Figaro*, etc., made to move by some of the best European animators. Stereo. (NR) 50 min. VHS only, \$19.98. Miramax.

continued on page 78

Labels For Less



Long winter months are traditionally the time to catch up with one's reading. However, there's also plenty of time to catch the movie versions of books or, if the snow's falling and the drifts are rising, the videos of the movies of books; in particular: *The Gambler*, *Prizzi's Honor* and *Islands in the Stream*, \$14.95 each from Paramount; *All Quiet on the Western Front*, *In the Name of the Father*, *A Dangerous Woman* and *The Getaway*, \$19.98 each from MCA/Universal; *Short Cuts*, \$19.95 from Columbia TriStar; *The Informer*, *Kitty Foyle*, *Morning Glory*, *The Gay Divorcée* and *None But the Lonely Heart*, \$14.98 each, all RKO titles from Turner.

This month's other videos, less literary but also worth collecting, include *Reality Bites*, \$19.98 from MCA/Universal; *Philadelphia*, *Remains of the Day*, *Mr Jones*, *My Life and Red Rock West*, \$19.95 each, and *A League of Their Own* and *Punchline* at \$14.95 each, all from Columbia TriStar; and *Suspicion*, \$14.98, an RKO title from Turner. —JK

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HOTROD

continued from page 54

And, unless you're really good under the hood, it's more sensible to leave the chip's installation to a professional. It's easy to replace the chips, if you have the right tools, but sometimes difficult to get to them.

SEEING FASTER

Sometimes the bottleneck in multimedia playback is in the actual visual output, the graphics card that sends the pictures to your monitor. The more elaborate the image you're looking at, the more time it takes to calculate where all those pixels go onscreen. Part of CD-ROM's appeal lies in the spiffy graphics, so it's no wonder that the going can be slow on your monitor. The answer is a faster graphics card.

A graphics accelerator has its own dedicated random access memory (RAM) just for the video side of things. The fastest cards feature video RAM, or VRAM, though less expensive cards featuring dynamic RAM (DRAM) will still make an improvement. As with all forms of memory, the more RAM on these cards, the better; 2 megabytes makes for pretty deluxe driving.

List prices range between \$200 and \$500 for such outstanding graphics cards as the Diamond Stealth 64, the Hercules Graphite Pro and the ATI Graphics Ultra Pro, with discounts driving the tab down to between \$150 and \$300. In coming years, CD-ROMs encoded with MPEG-compressed video will require even more elaborate graphics capabilities and better cards. But for now, even an inexpensive graphics accelerator, costing under \$100, will make both your CD-ROM and other applications work faster.

NO MONEY DOWN

There are few ways to appreciably improve your CD-ROM performance at little or no cost. But one important way is to make sure your video and CD-ROM drivers are up to date. These extensions to your PC's operating system carry the instructions on how to work the computer's various components. An out-of-date driver, whether for the video or the ROM drive will, at best, slow things down. At worst, it will prevent you from running new CD-ROMs. If you have a modem, you can usually download the latest drivers from commercial online services like CompuServe and America Online. If you're not online, a call to the company that makes the

component in question will usually yield a free, or almost free floppy disc with the updated driver.

Since CD-ROM drives are much slower than the hard drives the PC uses for storage, it often makes sense to copy some of the frequently accessed files to the hard disk. Some CD-ROM titles expect users to do this as part of the installation. If they don't, the application that actually runs the CD-ROM, which will be on the CD-ROM disk, can be copied to your hard drive, if you have the space. This one step can speed performance appreciably.

Perhaps the best way to speed up your multimedia performance, as well as the rest of your computer, is to get more RAM. Some CD-ROM titles use as much RAM during playback as your system can deliver. Most need at least 8 megabytes to run comfortably; 16 is much better. If you don't want to spring for more RAM, you can help your existing setup by turning off other applications, unnecessary extensions and drivers, and other system enhancements—and then rebooting—before you run the CD-ROM.

Multimedia can be one of the most exciting entertainment experiences you've ever enjoyed. But badly run multimedia is nothing more than an exercise in frustration. If your system isn't cutting the mustard, try one of these enhancements and get a taste of what the excitement is all about. ■

READER FORUM

continued from page 24

"This frequency [of the added filter] varies with the input impedance of the amplifier and the output impedance of the surround processor." This is not true. To demonstrate this, note the accompanying circuit diagram (see page 24) of the article's plan for a low-pass filter for single-channel equalization. Drawn this way, the output impedance of the processor, 75 ohms in Mr. Butterworth's example, is seen as loaded by the parallel combination of the input impedance of the amplifier (33,000 ohms) and by the capacitor Mr. Butterworth has added. This is a classic voltage divider, and the two resistors form an attenuator, which is flat across frequency, having an extremely small loss (0.02 decibel), and so is negligible.

However, the capacitor acts like a frequency dependent resistor, with its impedance dropping across frequency, causing a high-frequency roll-off. With the capacitor set to 470 picoFarads, the -3 dB frequency is not 10 kiloHertz, as

stated, but about 4.5 megaHertz. It might be a useful filter for video, but should have no audible effect on audio. The right value for a 75-ohm source and a 10 kHz, -3 dB corner is 0.22 microFarad. The problem with this is that it forms a load impedance for the processor of only 36 ohms at 20 kHz. This is so stringent a load that virtually no output stage can drive it.

Tomlinson Holman
Technical Director, THX Division
Lucasfilm

Brent Butterworth responds: Mr. Holman is correct on the first and third points. I erred in my calculations on the high-pass filter. Since then, I've built filters for three different systems and have found that for those systems, a value of about 1 microfarad was necessary to get enough high-frequency roll-off to compensate for boosted highs on a laserdisc. This places an even more stringent load on the output stage of the processor or preamp at high frequencies. But none of the models I tried seemed to have a problem driving the combined load of the filter and the amps connected after it.

Readers who are concerned about the low input impedance of the filter can, however, place a resistor (say 10 kilohms) in series with the line, before the capacitor. This will decrease the value of the capacitor that is needed, and is, in fact, a better design than the simpler, capacitor-only filter (which I recommended for the sake of simplicity). In this case, a 100 pF capacitor will serve quite well. You can plug in values above and below that to see what sounds best in your system.

As to Mr. Holman's second point, while I appreciate his reasoning, I protest the result. For consumers to get a precise simulation of the X-curve, thus compensating for the treble boost, they must buy a THX processor. I think buyers of inexpensive receivers have a right to good sound, too, especially since there's just no reason to use a treble boost on a laserdisc, unless you're catering to the minority of home theater owners who use THX processors. ■

TECH TIP

Frankenstein light

To give a character in your video that scary "Boris Karloff" look, simply place a light underneath your actor. Keep it out of camcorder range and point it up at his or her face. It worked when you stuck a flashlight under your chin to tell scary stories as a kid, and it'll work now just as well.

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Light cookies

For dramatic lighting in your videos, cut odd cookie-cutter shapes like triangles, rectangles and stars from pieces of stiff cardboard and fasten one a foot or two in front of one of your lights. Make sure the cutout is not too close to the light, as lights get very hot when left on for a while. This simple device, called a "cookie" by lighting professionals, is often used to create interesting shadows.

Make a grab

If you're thinking of buying a video printer, but you already have a Windows PC or an equivalent Mac, and a color inkjet printer, consider a video frame grabber instead. Even inexpensive graphic processors can increase contrast, correct a blue shift, crop images and perform other picture manipulation functions that few video printers can match.

Hi Sawada
Montréal, Canada

Kidvid as you like it

If your child is still too young to choose his or her own programs, now may be the time to invest in blank videocassettes. Start taping children's shows that fall within your interests for your child, or that meet your standards for educational or non-violent content. By the time your child is old enough to enjoy the tapes, you will have assembled a valuable library of tapes to keep him or her fully occupied.

Masaaki Sawada
Waterloo, Canada

Crossed circuits

If you are hooking up the audio outputs of your stereo TV directly to a Dolby Pro-Logic receiver or processor, make sure you turn off any spatial expansion or enhancement circuits. Since most of these circuits work on phase manipulation, they will interfere with the Dolby processing if the processed signal is sent to the TV's line out jacks.

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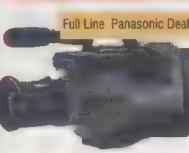
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May 1995	3/2/95	3/9/95
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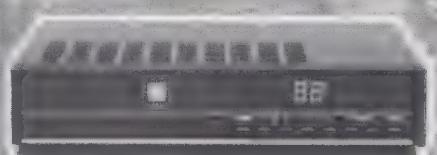
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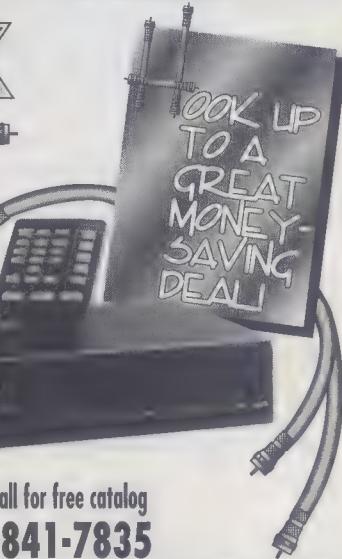
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Inside videogames, a master shows how it's done

As a teenager in his native Ireland, David Perry was obsessed with the idea of creating videogames. Told by his family that videogaming was not a proper occupation for a young man, Perry grabbed a \$5,000 a year job at a European game factory to get his foot in the door. The rest is history. In only 12 years, David Perry, now 27, has become one of the world's foremost videogame designers, with more than 40 titles to his credit, including such mega hits as Mirrorsoft's *Teenage Mutant Ninja Turtles*, Disney's *Aladdin* and Sega's *Global Gladiators*.

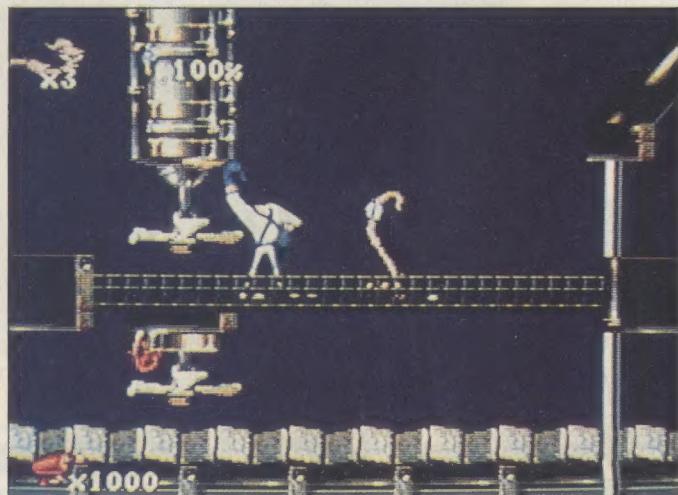
In the past year, he had more than 10 titles on store shelves simultaneously, a feat no other designer has accom-

"That works really well, but could we also do this?" There's continuous re-tuning. At any time, a game level can be axed and a new one added if it's better.

Video: But you must have some idea about the story?

Perry: We knew at each level that Jim had to start somewhere and end somewhere. We gave everyone a stack of paper, each with an idea someone had come up with. Each of us on the team had to draw their vision of that idea. One idea was junkyard, so I drew what I thought would be in a junkyard. Putting all the junkyards together gave us lots of different ways to go.

Video: What do you do to attract players to a game?



plished. Recently, Perry founded his own company, Shiny Entertainment, with a team of hand-picked videogamers. Shiny has just released its first title, *Earthworm Jim*, and an enthusiastic Perry sat down to talk with *Video Magazine* contributing editor Frank Beacham about the art and science of creating hit games.

Video: Do you start to make a videogame by setting it down in a script, as they do when making movies?

Perry: With *Aladdin*, we created a 200 page document that tells everything that's going to be in the game. It was like a script for a feature film. But we don't work like that anymore. In *Earthworm Jim*, we started with a character we thought was cool. As things came to us, we said,

Perry: It's important for a player to feel like he's part of the experience, instead of sitting back and not being involved at all. You have to want to control the character. If he dies, it's your fault. You were responsible for him falling off the edge. He has to be controllable all the time.

Video: Is there a point where you incorporate live video into a game?

Perry: We actually do that with *Earthworm Jim*, but it's subtle. Animators are really talented at doing funny characters, but they can't capture phenomena like fire and water. It's best to leave that to video. The way we do it is to shoot fire with a video camera and digitize the picture into a PC. So we have real fire in our game. We'll be using a lot more video in future games.

Video: Do you use video technology in game production?

Perry: Yes. Let's say I want a character to tiptoe across the screen. In normal videogame animation, the character moves his legs, but it doesn't look like real tiptoeing. We solve this problem by recording a video of a person tiptoeing. The animators use this as a reference for their drawings. This makes the final work incredibly better. All my animators have high-end digital video recorders, and they sit there with the pause on all day as they go through each frame and watch real humans moving. Anything a human can do, we do.

Video: If you weren't constrained by computer hardware, how would you enhance interactivity?

Perry: I would hire someone like Sylvester Stallone and have him scream at you as you play the game. Maybe I would have Stallone pull you along, and say you really suck or you really did a great job. You would have a personal encounter with the Stallone character. But the hardware's not there yet.

Video: How are new games better?

Perry: If you go to an arcade today, you'll see *Virtual Fighters*, which shows combat fighters in a three-dimensional world. Cameras, just like in the movies, can travel around the fight as it goes on, something only available in the arcades. In racing games, you actually feel like you're in the car. When you get off you actually sweat. Your adrenaline has been pumping. Most people don't realize videogames can get the adrenaline going, but they can.

Video: What's the future for videogames?

Perry: Virtual reality. Disney is about to give you that feeling on the *Aladdin* ride at Disneyland. You'll put a helmet on your head and control a carpet with your hands. You can fly on the carpet, and you'll feel you're within a world. The problem is to bring this home. When you're on the *Aladdin* ride, you'll be using \$500,000 of hardware. The only way we can get that home is to get lots of people playing at the same time. What might happen is that cable companies would pay \$500,000 for the computers and you'll play through your cable box on a two-way link.



Dave Perry & *Earthworm Jim*:
"You have to want to control the character."

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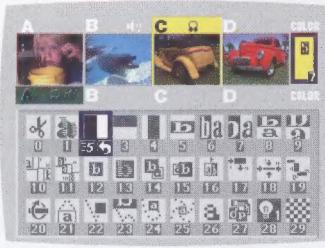
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